

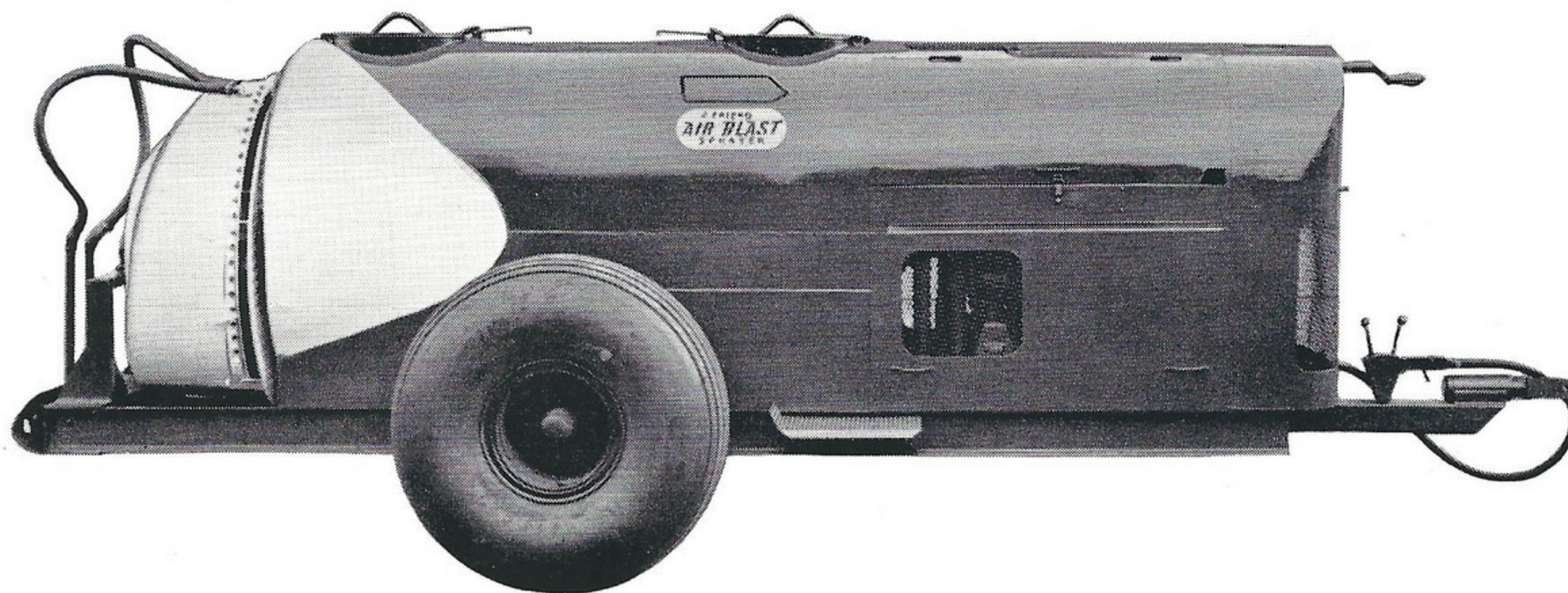
# sprayers

FRIEND MANUFACTURING CO., GASPORT, N. Y.



# Airblast Sprayer

with direct centrifugal-flow air stream



Friend offers the most up-to-date and efficient airblast type sprayer on the market today. A uniform and controlled air pattern results in an unusually fine and penetrating mist that means better coverage in less time. With proper nozzles, sprays up to four times normal concentration can be applied. Modern engineering has produced a blower so efficient that spray is deposited more effectively with less horsepower. Fuel savings, as many growers testify, run from 25 to 50%.

The overall width is substantially less than most air-stream sprayers. Because of its narrow tread and low center of gravity, the Friend Airblast Sprayer is easier on the trees especially in late sprays.

It combines all proven design features such as positive action push-pull remote control valves and engine throttle, self-filling attachment with positive pump primer, rotating universal type fan

housing, airplane type tires, double strained spray material, large pump for quick refill, and hydraulic agitation.

All these features add up to more efficient spraying with less expense for fuel and sprayer maintenance.

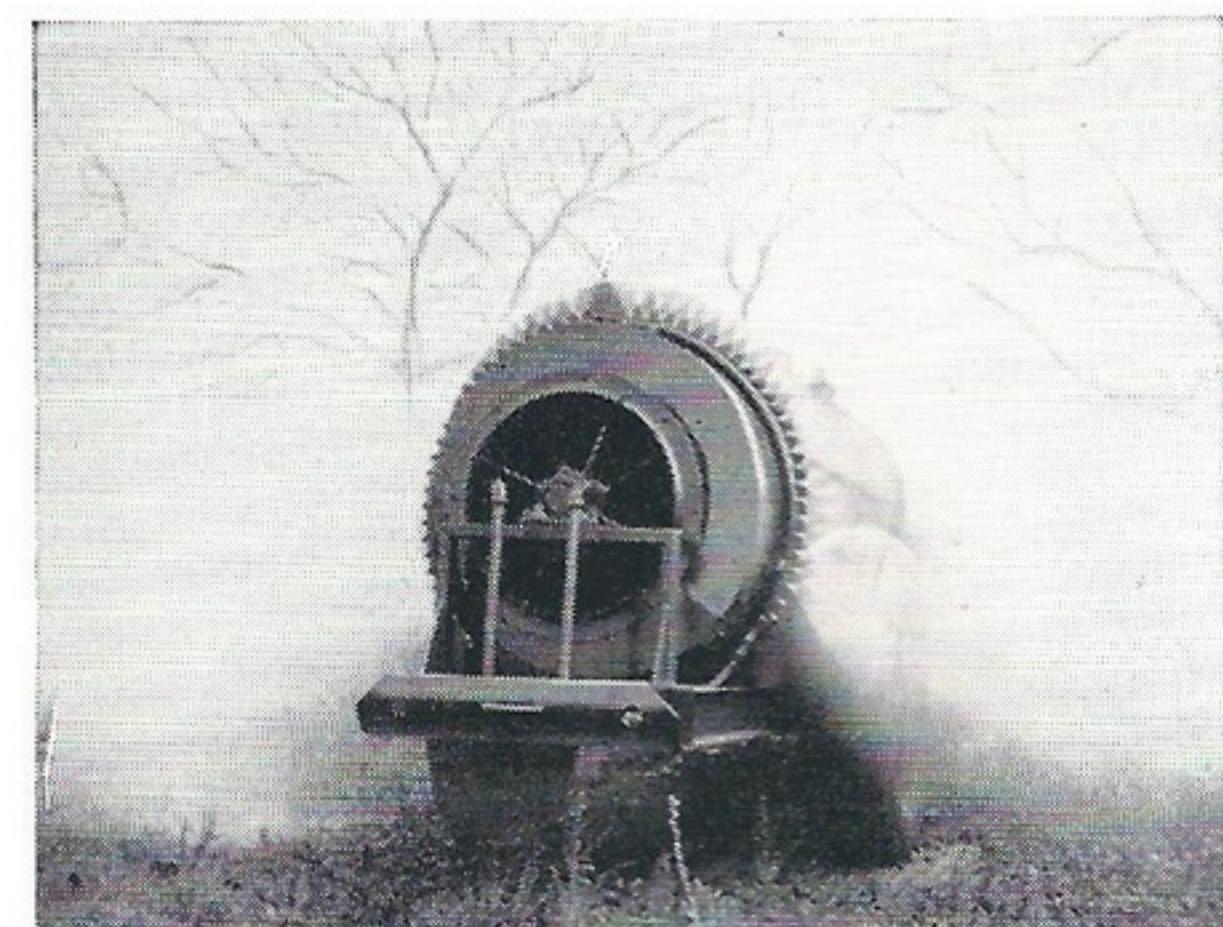
## SPECIFICATIONS

Tank, steel	500 gal.
Overall length (less hitch)	15 ft.
Overall width	75 in.
Overall height, lowest position	67 in.
Ground clearance	14 to 20 in.
Tread	56 in.
Tires	11.25 x 24 standard, 16.00 x 16 extra
Fan	Centrifugal flow
Pump	2" centrifugal, 200 gpm
Agitation	Hydraulic, adjustable
Engine	Heavy duty industrial type develops 65 hp @ 2250 rpm
Net weight	gov. setting, water cooled 4800 lbs.

## Choice of 1-Way or 2-Way Spraying for Maximum Flexibility



Universal type fan housing easily converts to either type of spraying. Special scroll-shape housing gives full efficiency in either setting. Spray manifolds introduce full capacity into 1-way or 2-way air stream with no air-stream obstruction. Fan housing can be quickly rotated from one side to other and locked into position.





## Masts and Booms

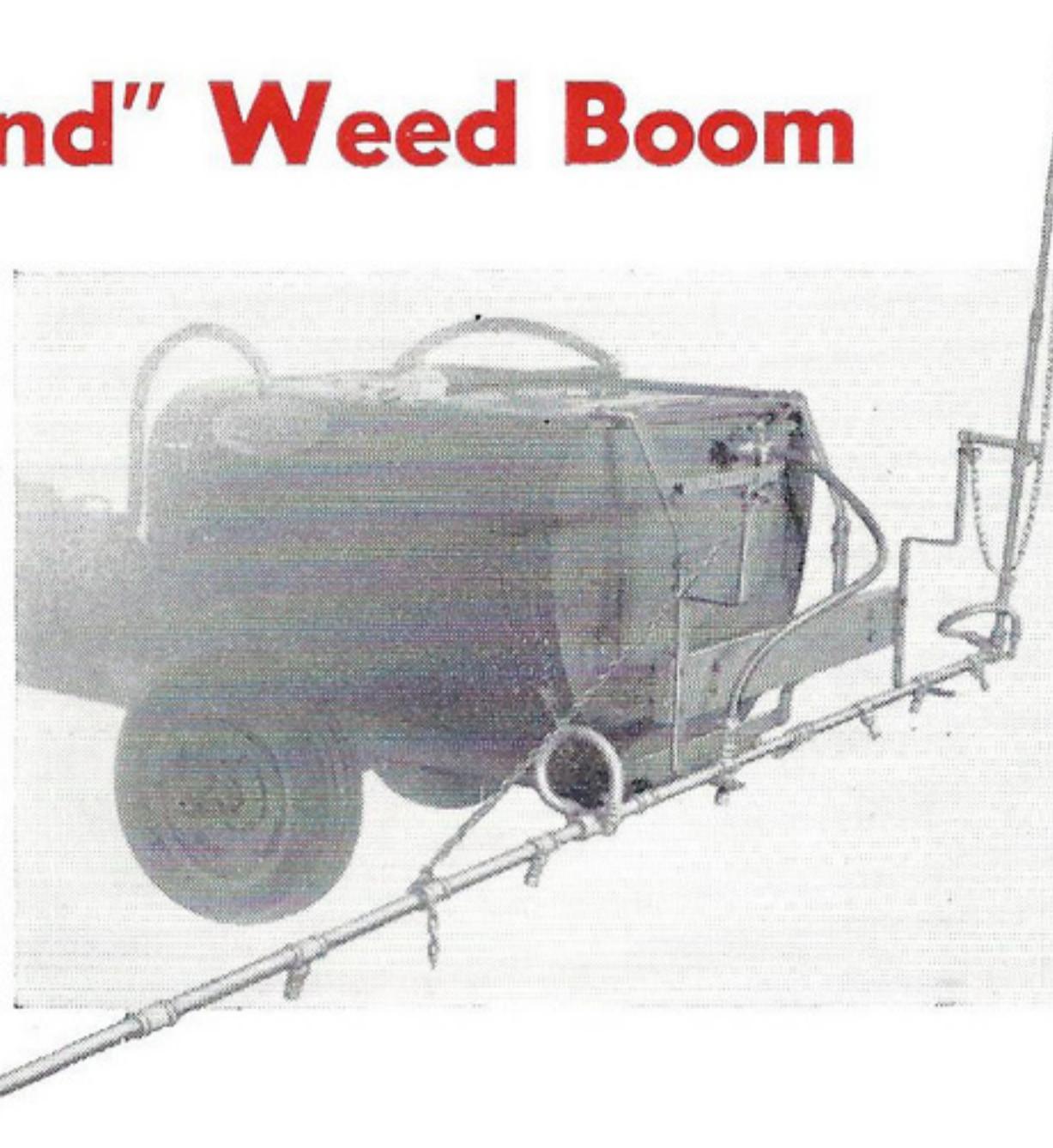
### Low Clearance- Oscillating Mast



For faster spraying, better coverage at minimum labor cost and lowest equipment cost, the Friend oscillating mast is an excellent addition to a standard Friend high pressure sprayer. It provides the advantages of *gun spraying* instead of nozzles and does it automatically. Available with either 8 guns or 12 guns to suit the capacity of the sprayer, the two sides are individually controlled. Position of each gun may be adjusted and the flow pattern regulated. Belt tension is adjustable and stroke can be varied. Also available in fixed mast design.

Other types of masts are available to suit orchard conditions. The 6 gun and 8 gun manual spray masts provide ease of manual operation with complete coverage.

### "Friend" Weed Boom



Especially suitable for low pressure spraying of fields, parks, and golf courses. Furnished with 12, 16 or 20 nozzles. The 14-inch spacing gives double overlap of the fan pattern when the boom is 17 or 18 inches from the ground, assuring thorough coverage without skips.

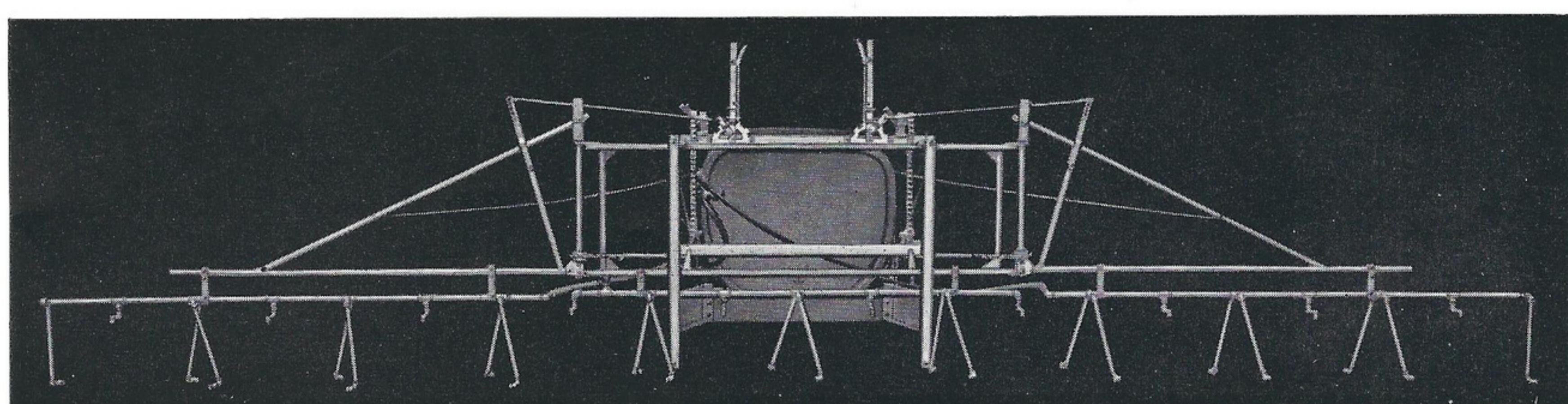
"Friend" Weed Nozzles are used (see page 16) with replaceable discs of 2 sizes: .059" orifice is standard, .039" optional. *Concentrate nozzles can be furnished.*

### Row Crop Booms

A complete line of booms is offered to suit all field and crop conditions, from small weed booms for low pressure spraying (shown above) to the new 42 foot one-sided, hydraulically operated boom developed originally for high pressure spraying of tomatoes.

Superior features such as the spring hinge for protection of boom wings against breakage, gear-driven chain for vertical lifting of the entire boom, flexible drop pipes (optional) which eliminate damage on rough ground, all make Friend booms more efficient and easier to operate.

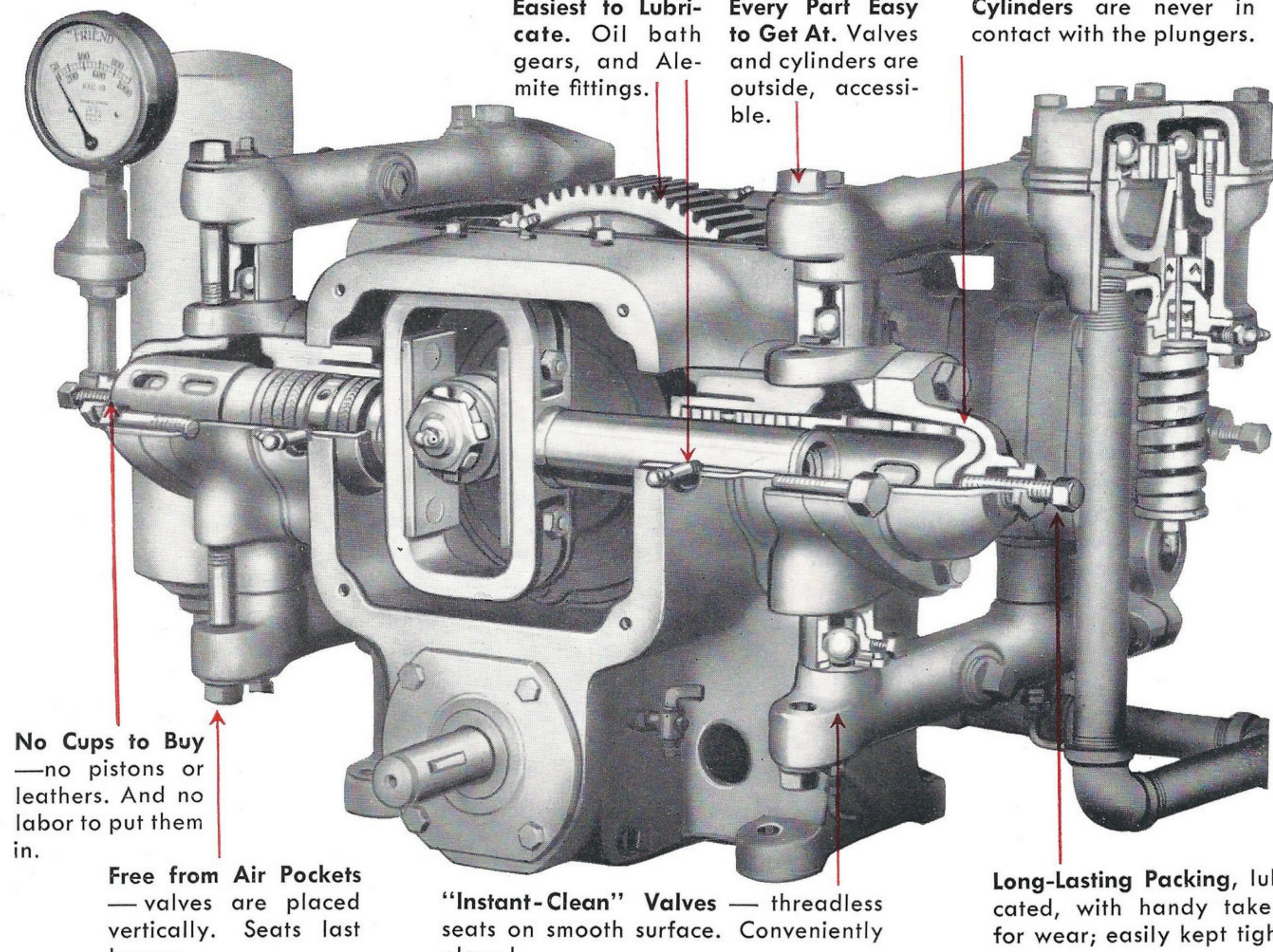
Write for details on advantages and the many features of the 42 foot one-sided tomato boom. Covers 84 foot area from a single roadway.





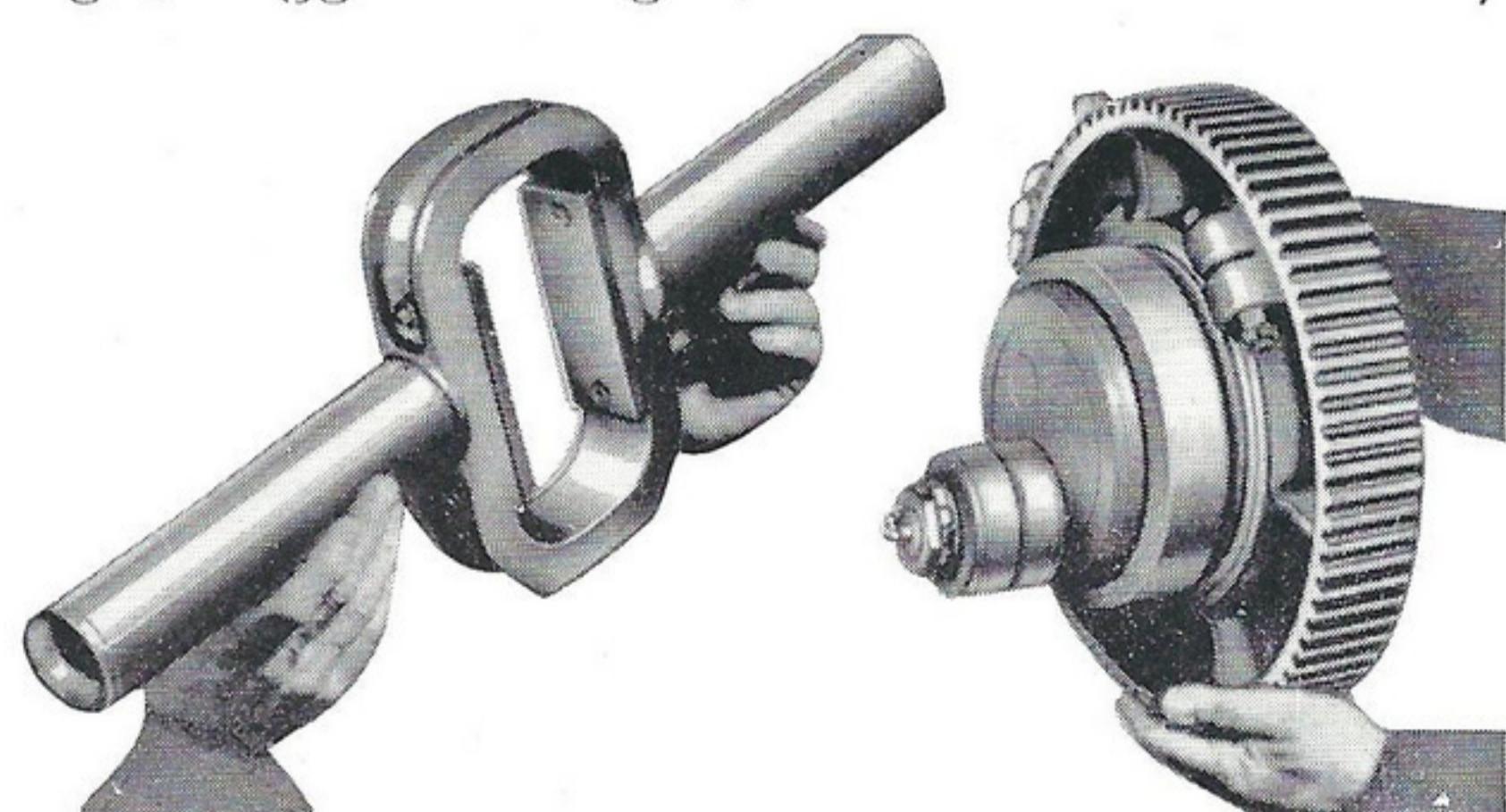
sprayers

# High Pressure Pumps

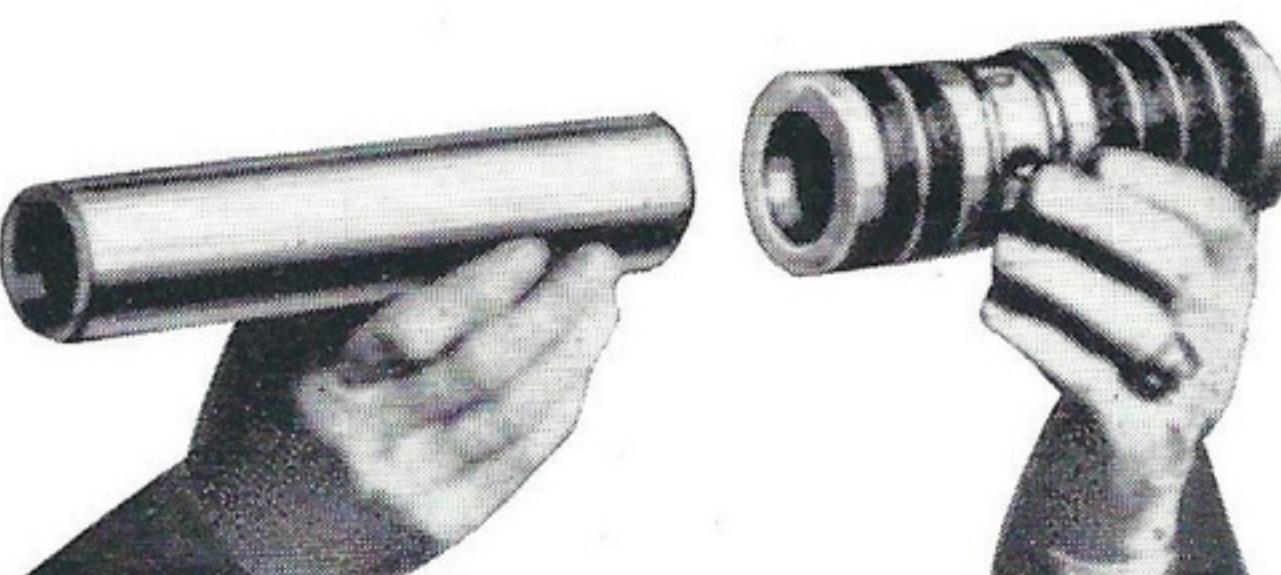


Friend High Pressure Spray Pumps are outstanding for economical, dependable performance even under the most adverse conditions. Simple design, rugged strength, unexcelled reliability —

based on a half-century of engineering development and manufacture — have earned Friend the reputation of unequalled dependability. You'll get better performance every time.



**Fewest Moving Parts.** The duplex Friend pumps have only two moving parts, the quadruplex only three. There are no connecting rods . . . no wrist pins . . . no complicated drives to wear and become noisy and inefficient.



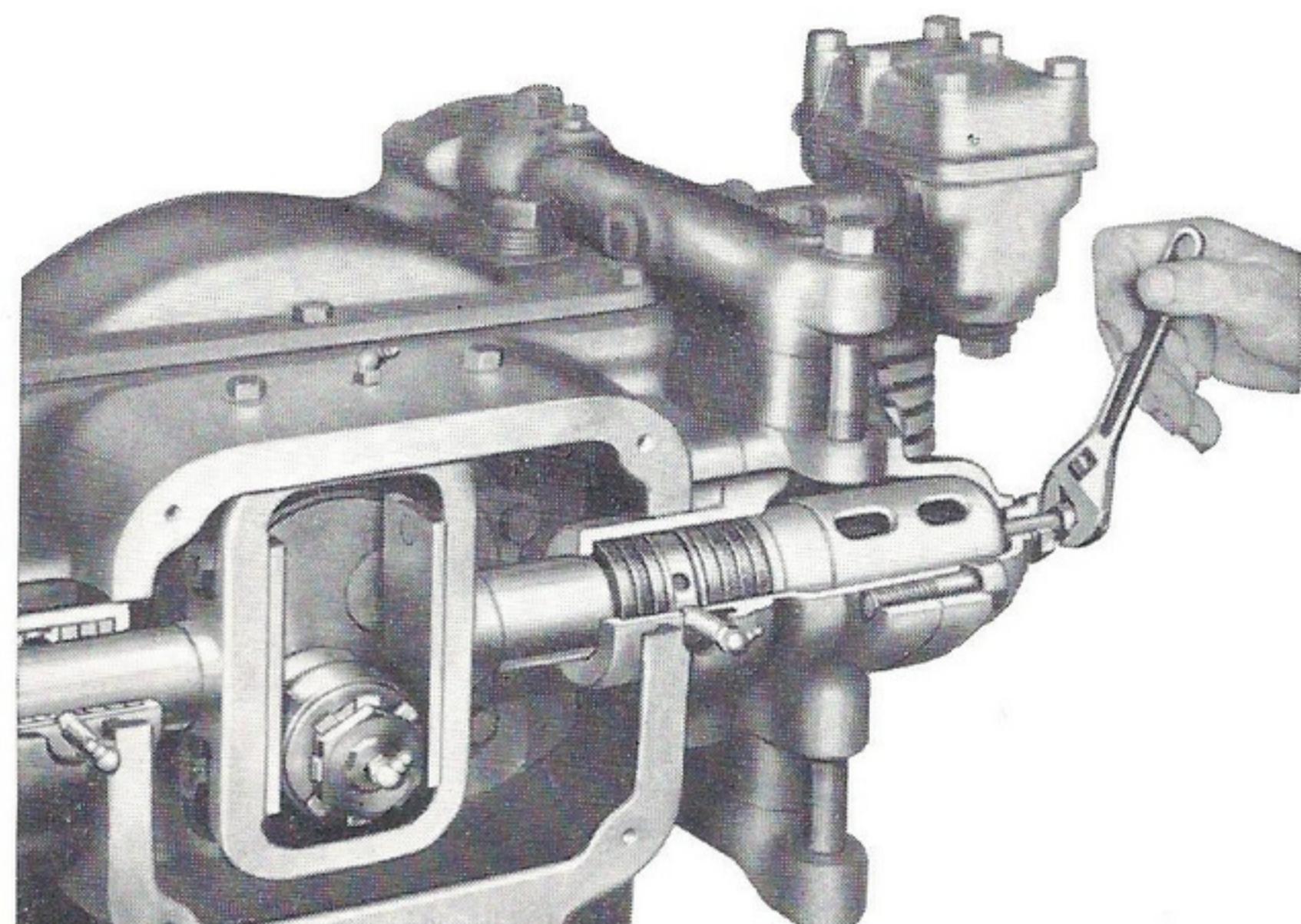
**No Cylinder Wear.** The plungers don't touch the cylinder walls. The plunger rides on packing that is constantly lubricated through an Alemite fitting. The lubrication seals out the spray solution and positively prevents cylinder wear. A Friend pump will give years of satisfactory service with only the minor adjustment of taking up on the packing.

## ★ Instant Leak Stoppage

If after many hours of operation a trickle of spray solution starts to leak from the cylinder of a Friend Pump, all that is necessary to stop the leak is to give the packing adjustment bolt a very slight turn. The leak is stopped instantly!

It is not even necessary to stop the pump, the adjustment is done from the outside with the pump in operation. Turning a bolt at the end of the cylinder cup, forces the packing gland inward to increase pressure on the packing and stop the leak at once.

Only Friend gives you this simple adjustment—no tearing down to install a new set of cups. There is no need to keep a leaking, inefficient pump in operation until there is time to service it.



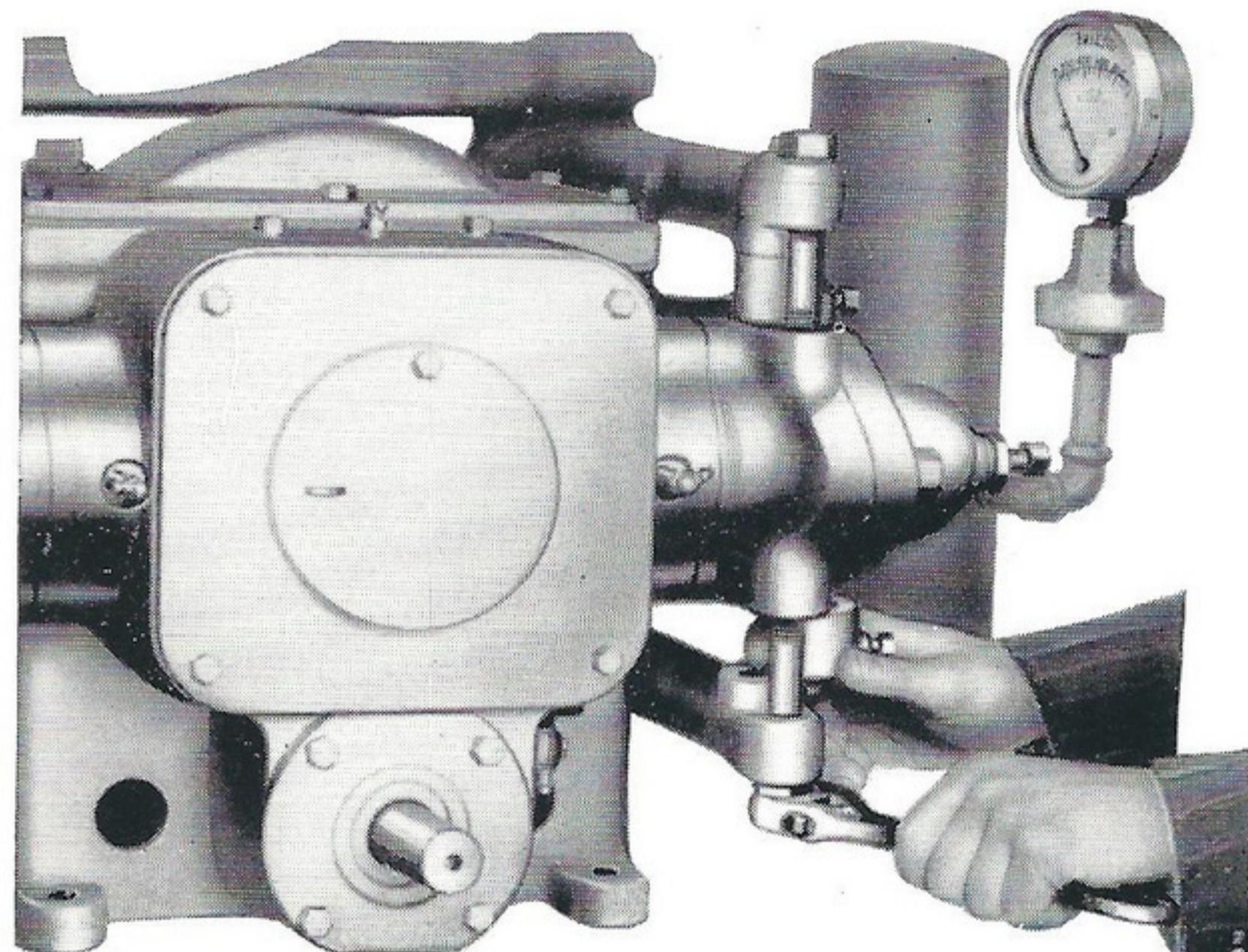
A slight turn of the wrench stops leakage on a Friend Pump—even when pump is in operation. You never spray with a leaking pump.

## ★ Instant Clean Valves

In any high pressure pump it is important to be able to clean the valves quickly. When spray solutions being pumped cause sediment to accumulate on the valves quick servicing is vital to keep down-time to a minimum.

On a Friend Pump it takes only a few seconds to loosen one hex-head screw and slide out the entire valve—cage, ball and seat. The seats are easily removed because they are neither threaded nor tapered. The valve cage is held in place by pressure, on a smooth surface, and comes out easily as soon as released. And all Friend valve cages are equipped with conveniently located drain plugs.

In the Friend High-Pressure Pump you get the *quickest* and *easiest* valve cleaning of any pump on the market.



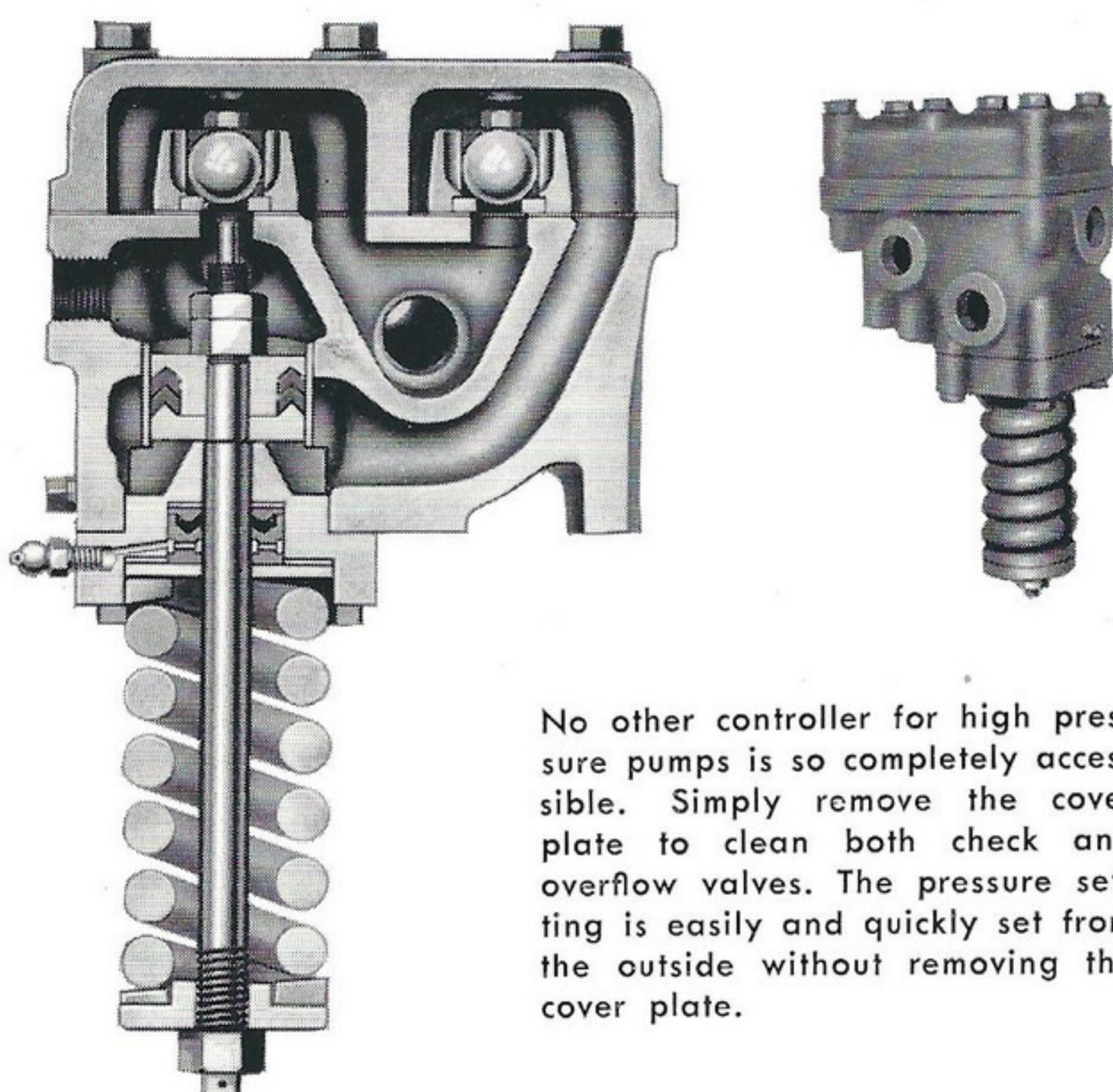
Loosen the pressure bolt, and the valve comes right out for easy cleaning.

## ★ Trouble-free Pressure Control

The Friend automatic pressure control is another outstanding engineering achievement for high pressure pumps. Once the pressure is set for the job no further adjustment is necessary. When the discharge is shut off, the overflow valve opens and the spray solution is by-passed to the suction manifold. The pump and motor idle at no load. Open the valve and the discharge begins immediately. The pressure remains exactly where you set it . . . no build-up, no adjustment.

Pressure setting, however, can be changed in a second by slight adjustment of nut on the base of the controller. Maintenance, when necessary, is simple and easy. Both check and overflow valves are right under the cover plate.

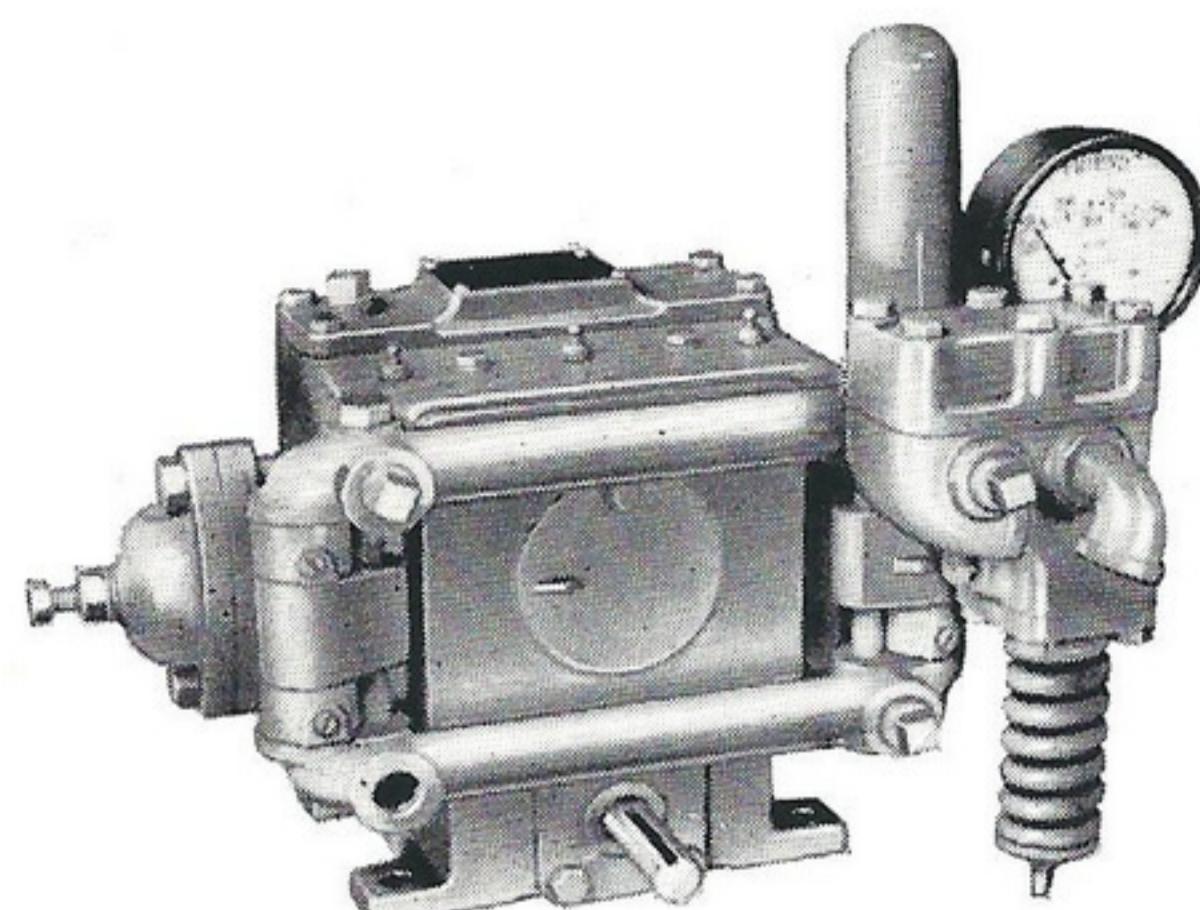
The Friend controller is the result of almost a half-century of development. Operation is smooth and dependable—efficiency is unusually high—and all parts are easily accessible.



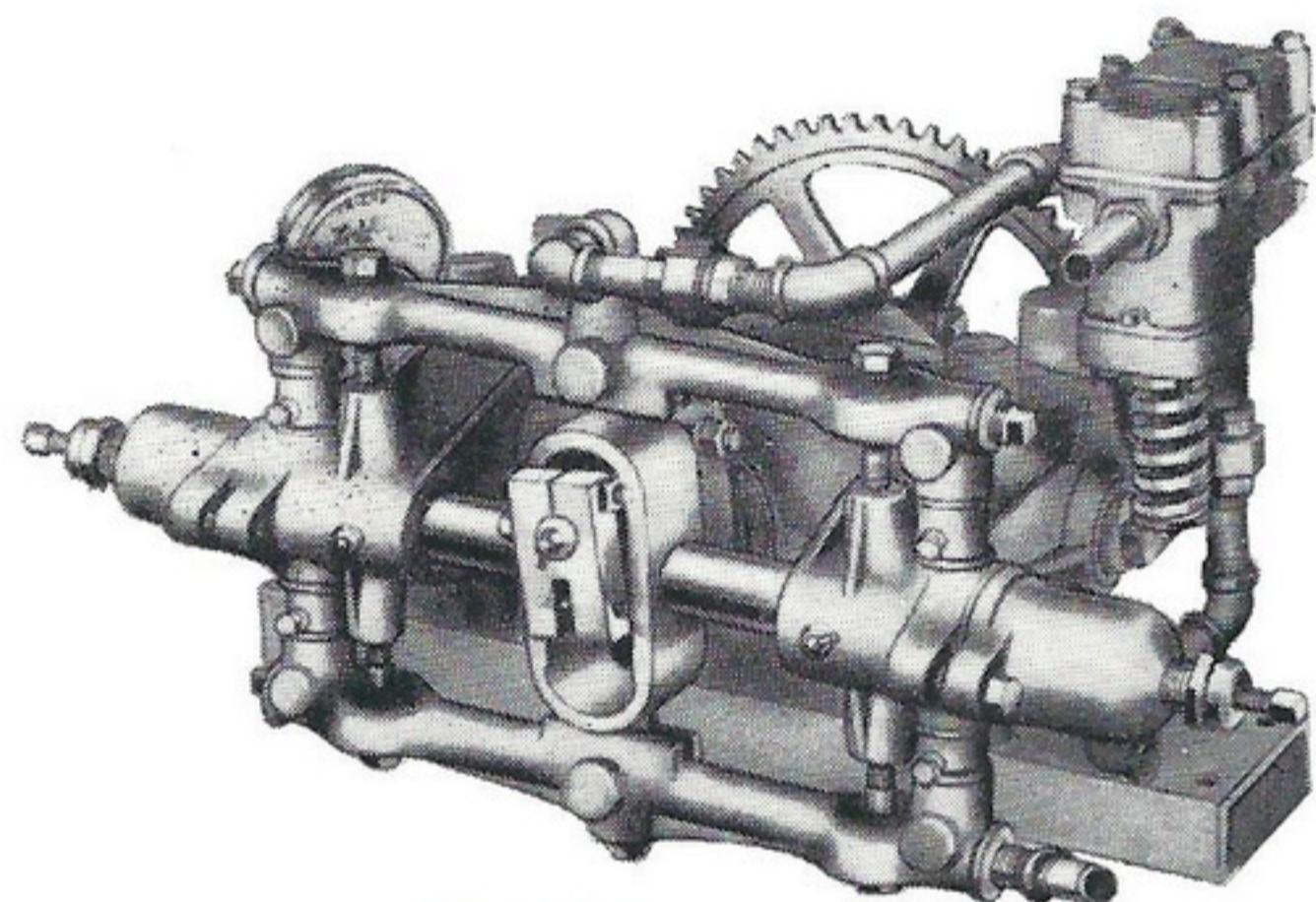
No other controller for high pressure pumps is so completely accessible. Simply remove the cover plate to clean both check and overflow valves. The pressure setting is easily and quickly set from the outside without removing the cover plate.



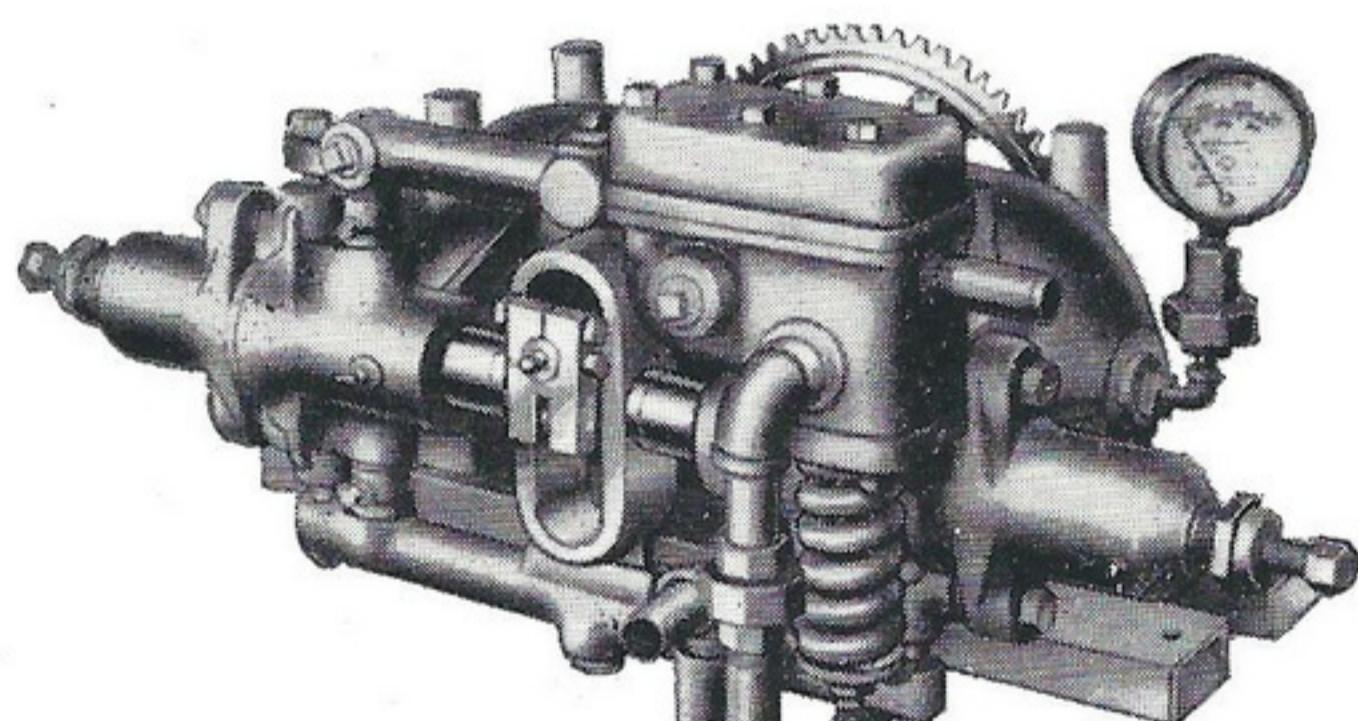
# High Pressure Pumps



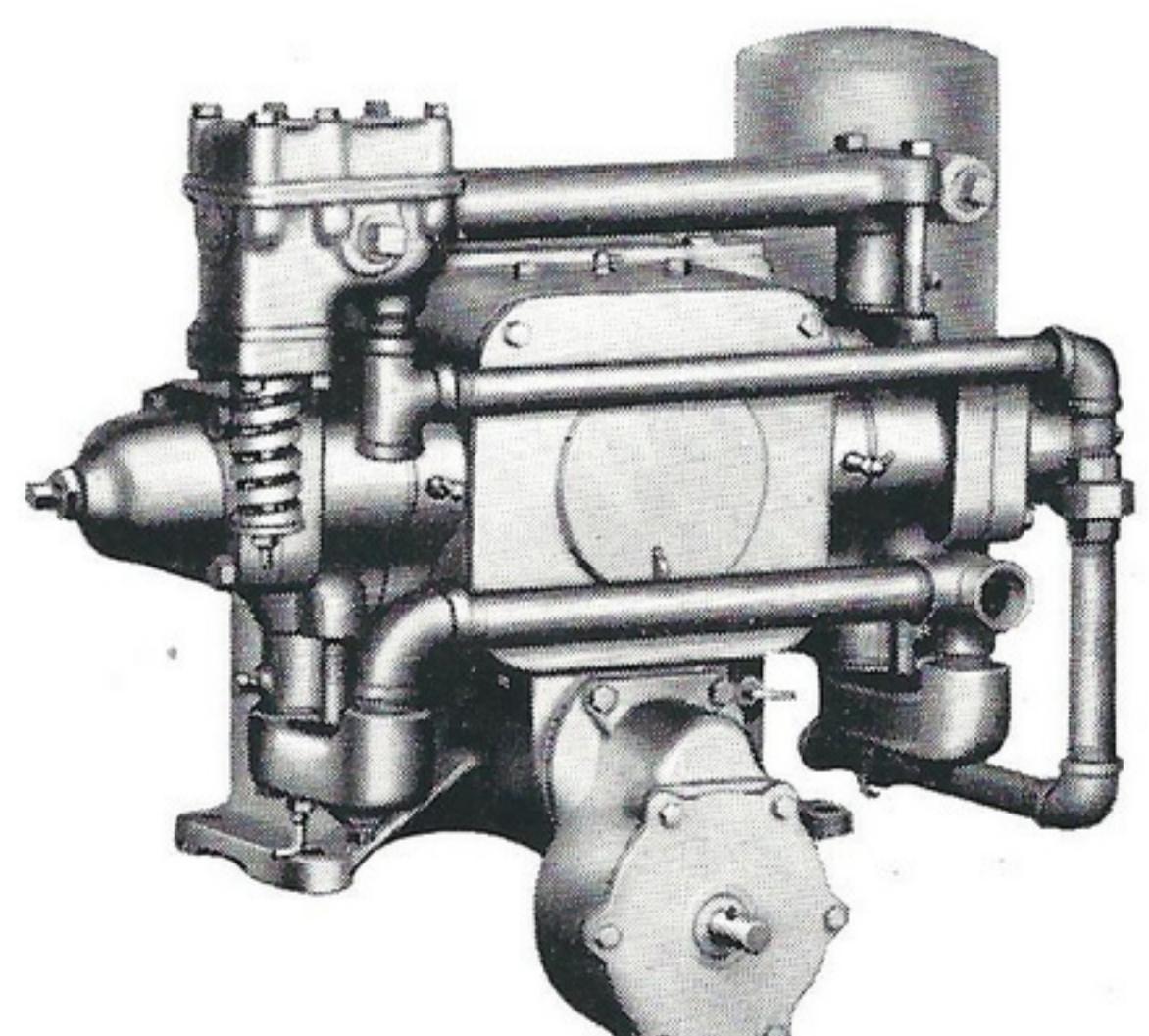
**OX** 3 1/2 gpm  
350 lb. pressure



**K** 6 gpm  
400 lb. pressure



**KA** 12 gpm  
400 lb. pressure



**NX** 15 gpm  
600 lb. pressure

## DUPLEX PUMPS

Two Cylinders

### Pumps, Engine Powered\*

Model	OX	K	KA	NX
Capacity, gpm.....	3 1/2	6	12	15
Pressure, lbs. per sq. in.....	350	400	400	600
Plungers, number.....	2	2	2	2
Plunger, diameter, in.....	1 3/8	1 1/2	2	2
Plunger, stroke, in.....	1 5/8	2 3/4	3	3
Pump Speed, rpm.....	175	150	155	195
Pump Gear Ratio.....	3.94 to 1	—	—	4.53 to 1
Drive Speed, rpm.....	690	150	155	885
Drive Shaft, diameter, in. .	3/4	1 1/4	1 1/4	1 1/4
Discharge, pipe size, in. ....	1/2	1/2	3/4	3/4
Suction, pipe size, in. ....	1/2	1/2	3/4	1 1/4
Agitator P.T.O. Ratio.....	—	—	—	2.85 to 1
Agitator P.T.O., rpm .....	175	150	155	310
Pump, Length, in.....	11 3/4	15	18	19
Pump, Width, in.....	18	30	35	29 1/2
Pump, Height, in.....	9 3/4	15 1/2	13	22 1/2
Shipping Weight, lbs.....	90	170	270	315
Sales Code.....	OXP	KP	KAP	NXP

### Pumps, Tractor P.T.O. Powered

Model	NT
Capacity, gpm.....	15
Pump Speed, rpm.....	195
Pump Gear Ratio.....	2.62 to 1
Drive Speed, rpm.....	510
Drive Shaft Spline Size.....	1 1/8"-6s
Sales Code.....	NTP

### \*Standard Engines

for Pump Model	OX	K	KA	NX
Make.....	Lauson	Wiscon'n	Wiscon'n	Wiscon'n
Model.....	TLH	ABN	AKN	AHH
Horsepower.....	2	3	5	9
Cylinders.....	1	1	1	1
Bore, in.....	2 1/4	2 1/2	2 7/8	3 5/8
Stroke, in.....	2 1/4	2 3/4	2 3/4	4
Displacement, cu. in.....	8.94	13.5	17.8	41.3
Type.....	Air Cooled	Air Cooled	Air Cooled	Air Cooled
RPM.....	2760	2260	3100	2360
Reduction Gear.....	4 to 1	3.25 to 1	5.5 to 1	—
P.T.O., rpm.....	690	725	560	—
Connection.....	Flexible Coupling	Chain & Sprocket	Chain & Sprocket	Chain & Sprocket



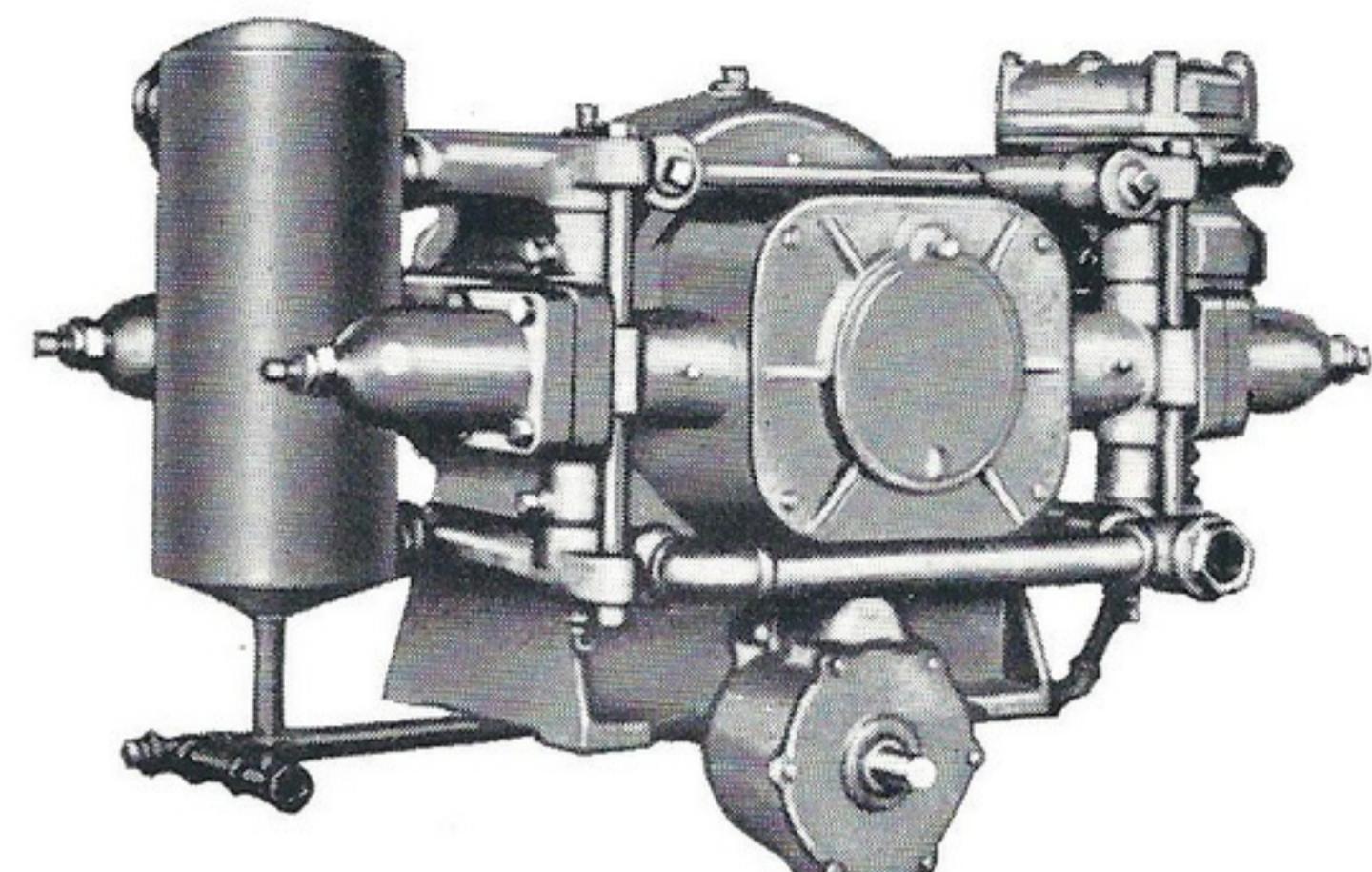
# High Pressure Pumps

## QUADRUPLEX PUMPS

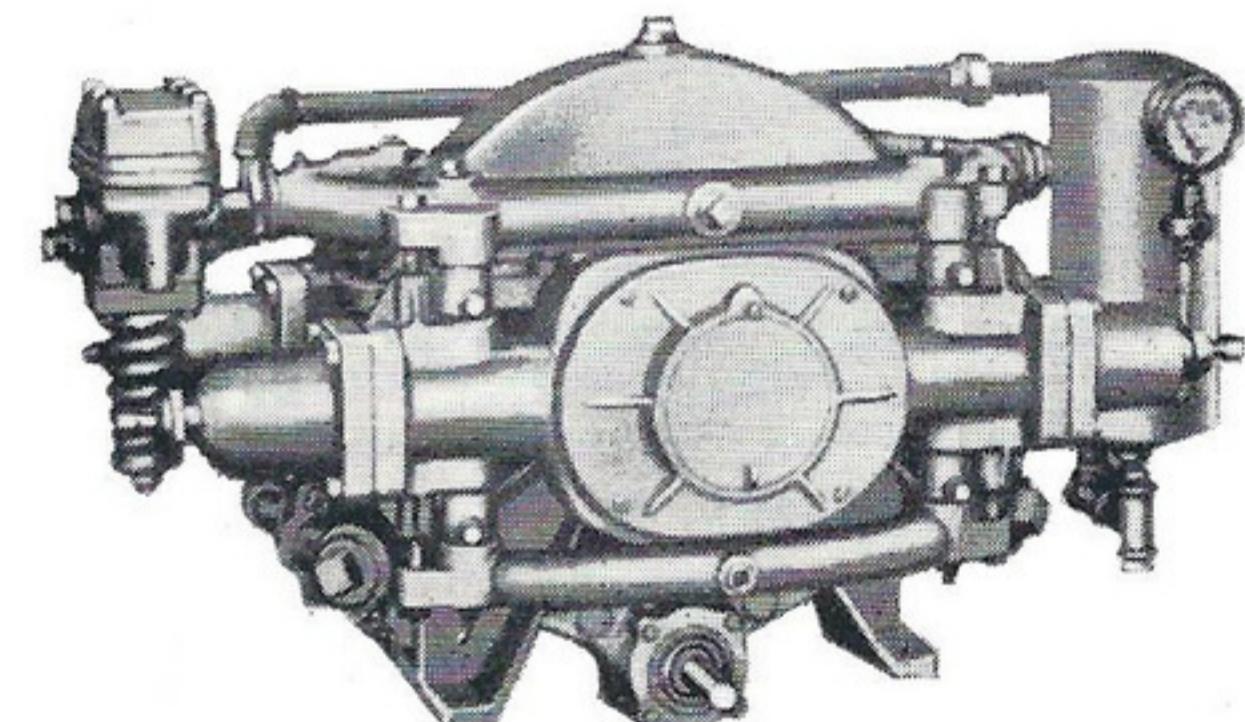
Four Cylinders

### Pumps, Engine Powered\*

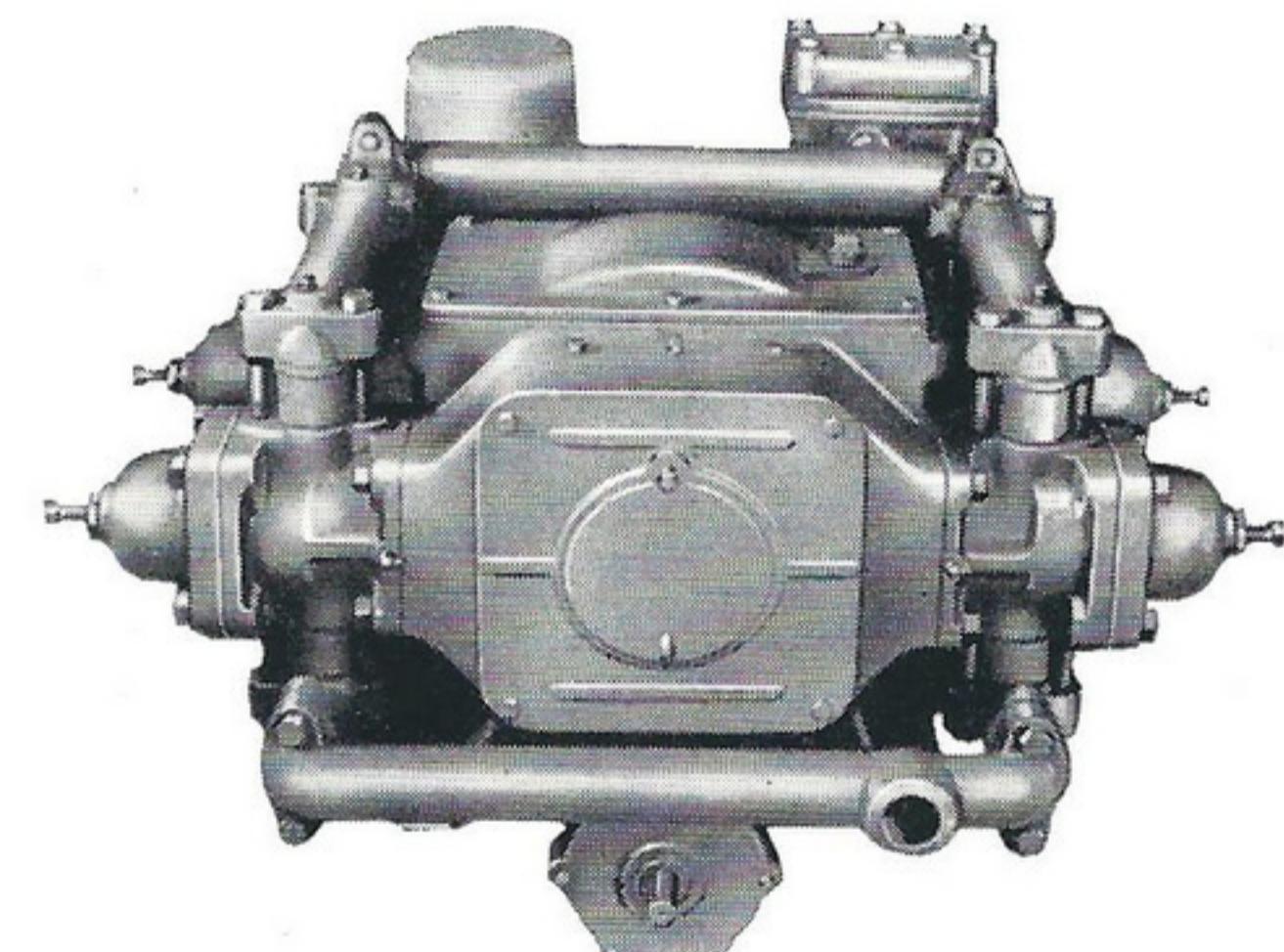
Model	FX	AXB	GXA	YX
Capacity, gpm.....	25	35	50	60
Pressure, lbs. per sq. in. ....	700	700	800	800
Plungers, number.....	4	4	4	4
Plunger, diameter, in.....	1 $\frac{3}{4}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$
Plunger, stroke, in.....	4	4	3 $\frac{1}{2}$	3 $\frac{3}{4}$
Pump Speed, rpm.....	155	105	170	160
Pump Gear Ratio.....	5.6 to 1	8.0 to 1	4.375 to 1	4.59 to 1
Drive Speed, rpm.....	870	840	745	735
Drive Shaft, diameter, in.....	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{3}{4}$	1 $\frac{3}{4}$
Discharge, pipe size, in. ....	$\frac{3}{4}$	1	1	1 $\frac{1}{4}$
Suction, pipe size, in.....	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Agitator P.T.O. Ratio.....	2.73 to 1	3.0 to 1	2.73 to 1	2.73 to 1
Agitator P.T.O., rpm .....	320	280	275	270
Pump, Length, in.....	26	21	21	34
Pump, Width, in.....	40	45	38	41
Pump Height,, in.....	27	27	20	28 $\frac{1}{2}$
Shipping Weight, lbs.....	645	825	875	1250
Sales Code.....	FXP	AXBP	GXAP	YXP



**FX** 25 gpm  
700 lb. pressure



**AXB** 35 gpm  
700 lb. pressure



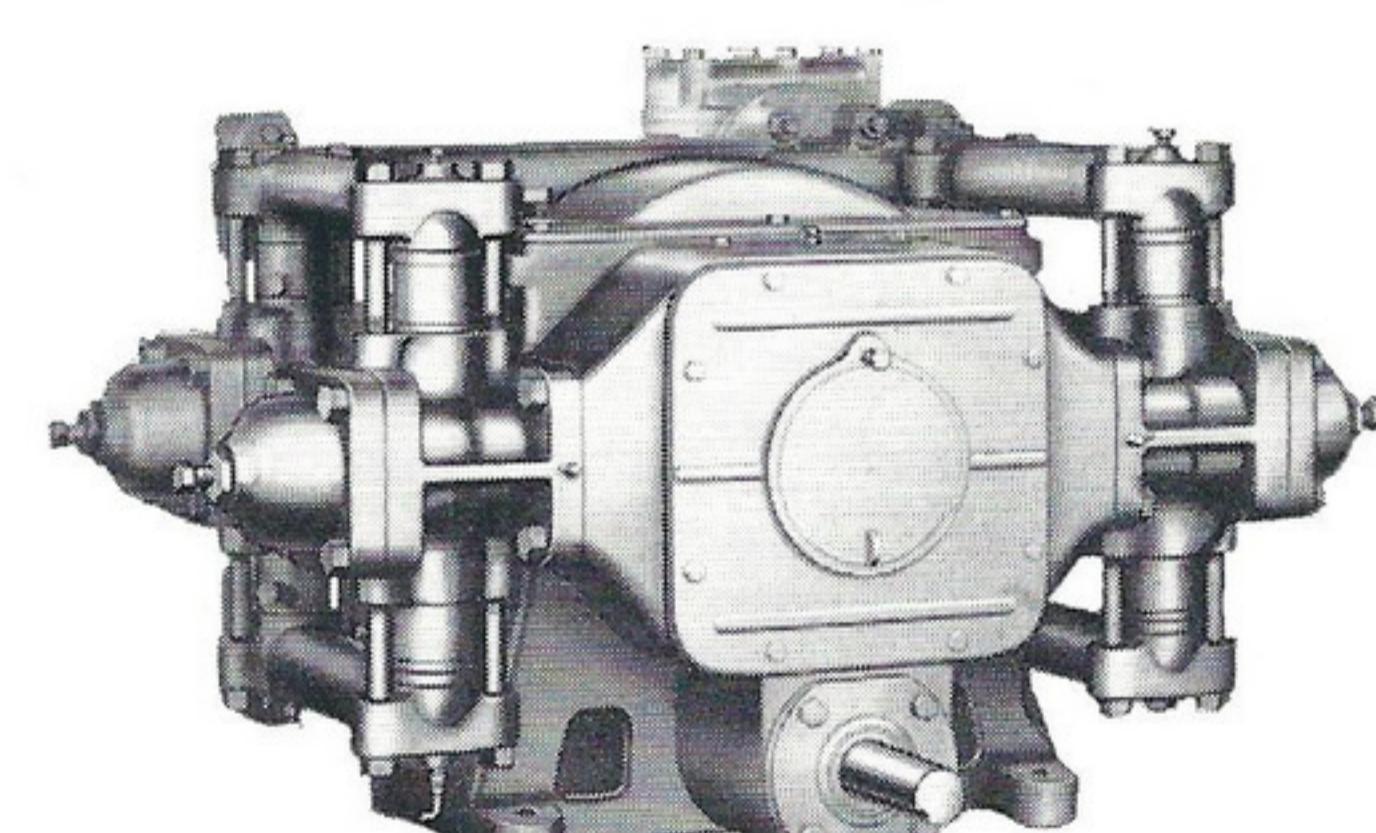
**GXA** 50 gpm  
800 lb. pressure

### Pumps, Tractor P.T.O. Powered

Model	FT	ATB	GTA	YT
Capacity, gpm.....	20	30	40	50
Pump Speed, rpm.....	125	90	135	135
Pump Gear Ratio.....	4.11 to 1	5.8 to 1	3.78 to 1	4.0 to 1
Drive Speed, rpm.....	515	520	515	535
Drive Shaft Spline Size.....	1 $\frac{1}{8}$ "-6s	1 $\frac{3}{8}$ "-6s	1 $\frac{3}{8}$ "-6s	1 $\frac{3}{8}$ "-6s
Sales Code.....	FTP	ATBP	GTAP	YTP

### \*Standard Engines

for Pump Model	FX	AXB	GXA	YX
Make.....	Wiscon'n	Hercules	LeRoi	LeRoi
Model.....	VE4	IXB	D176	D201
Horsepower.....	18	28	35	43
Cylinders.....	4	4	4	4
Bore, in.....	3	3 $\frac{1}{4}$	3 $\frac{3}{4}$	4
Stroke, in.....	3 $\frac{1}{4}$	4	4	4
Displacement, cu. in.....	91.9	144	176	201
Type.....	Air Cooled	Water Cooled	Water Cooled	Water Cooled
RPM.....	2320	2100	1750	1730
Reduction Gear.....	2.67 to 1	2.5 to 1	2.35 to 1	2.35 to 1
P.T.O., rpm.....	870	840	745	735
Connection.....	Flexible Coupling	Flexible Coupling	Flexible Coupling	Flexible Coupling



**YX** 60 gpm  
800 lb. pressure

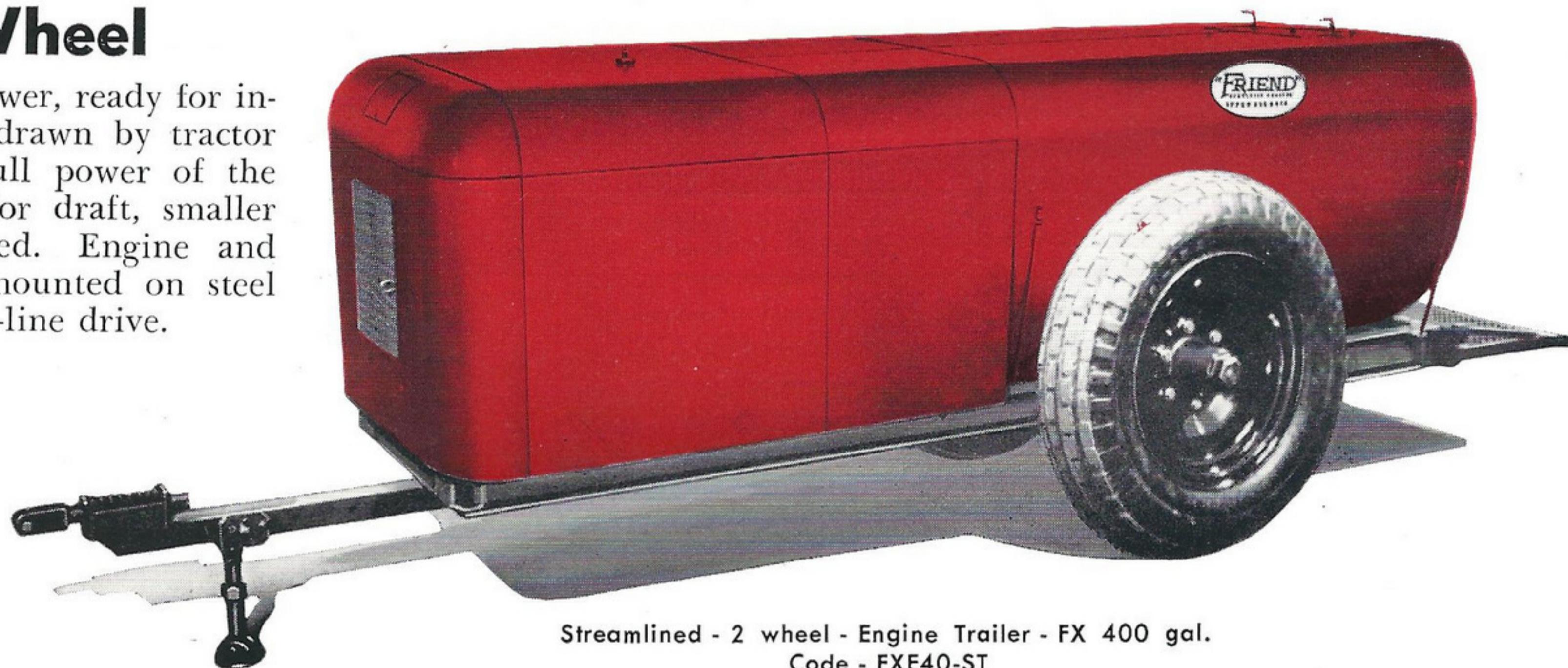


# Engine Trailers

ENGINE POWERED ★ TRACTOR DRAWN

## Two Wheel

Complete with power, ready for instant service when drawn by tractor or truck. As the full power of the tractor is utilized for draft, smaller tractors can be used. Engine and pump are rigidly mounted on steel frame with direct in-line drive.



Streamlined - 2 wheel - Engine Trailer - FX 400 gal.  
Code - FXE40-ST

Model	K	6 gal. per minute 400 lb. pressure		KA	12 gal. per min. 400 lb. pressure		NX	15 gal. per min. 600 lb. pressure	
Tank Capacity (1).....	100	150	200	150	200	200	300		
Overall Length.....	91"	91"	91"	91"	91"	85"	107"		
Overall Width.....	56"	56"	56"	56"	56"	61½"	67½"		
Overall Height.....	43½"	52"	51"	52"	51"	50½"	52½"		
Wheel Rim.....	4.00x16 D.C.	4.00x16 D.C.	4.00 x 16 D.C.	4.00 x 16 D.C.	4.00 x 16 D.C.	4.50 x 16 D.C.	6.00 x 20 F.B.		
Tire Size.....	6.00-16	6.00-16	6.00-16	6.00-16	6.00-16	6.00-16	7.50-20		
Tread (Normal).....	48½"	48½"	48½"	48½"	48½"	53"	58"		
(Adjustable).....	55" to 71"*	55" to 71"*	55" to 71"*	55" to 71"*	55" to 71"*	53" to 69"	58" to 74"		
Ground Clearance.....	11"	11"	11"	11"	11"	11"	10"		
(Adjustable).....	6" to 16"*	6" to 16"*	6" to 16"*	6" to 16"*	6" to 16"*	6" to 16"	10" to 20"		
Shipping Weight.....	850	950	1050	970	1070	1800	1900		
Sales Code (2).....	KE 10†	KE 15†	KE 20†	KXE 15†	KXE 20†	NXE 20	NXE 30		

\* Optional at extra cost.

† Streamlining not available.

Model	FX	25 gal. per min. 700 lb. pressure	AXB	35 gal. per min. 700 lb. pressure	GXA	50 gal. per min. 800 lb. pressure	YX	60 gal. per min. 800 lb. pressure
Tank Capacity (1).....	300	400	400	500	500	600	500	600
Overall Length.....	134"	134"	140"	158"	172"	190"	172"	190"
Overall Width.....	66"	74"	75"	77"	77"	77"	77"	77"
Overall Height.....	59"	61"	62"	61"	63"	63"	63"	63"
Wheel Rim.....	8 x 24 D.C.	8 x 24 D.C.	8 x 24 D.C.	8 x 24 D.C.	8 x 24 D.C.	8 x 24 D.C.	8 x 24 D.C.	8 x 24 D.C.
Tire Size.....	9.00-24	9.00-24	9.00-24	11.25-24	11.25-24	11.25-24	11.25-24	11.25-24
Tread (Normal).....	56"	64"	64"	64"	64"	64"	64"	64"
(Adjustable).....	56" to 72"	56" to 76"	60" to 76"	60" to 76"	60" to 76"	60" to 76"	60" to 76"	60" to 76"
Ground Clearance.....	13"	13"	13"	12"	12"	12"	12"	12"
(Adjustable).....	13" to 23"	13" to 23"	13" to 23"	12" to 24"	12" to 24"	12" to 24"	12" to 24"	12" to 24"
Shipping Weight .....	2700	2800	3100	3300	4600	4800	5000	5200
Sales Code (2).....	FXE 30	FXE 40	AXB 40	AXB 50	GXA 50	GXA 60	YXE 50	YXE 60

(1) Wood tanks standard. Steel tanks optional at extra cost.

(2) Open type standard. For streamlining at extra cost add -ST to Sales Code.

For pump and engine specifications, see pages 6 and 7.



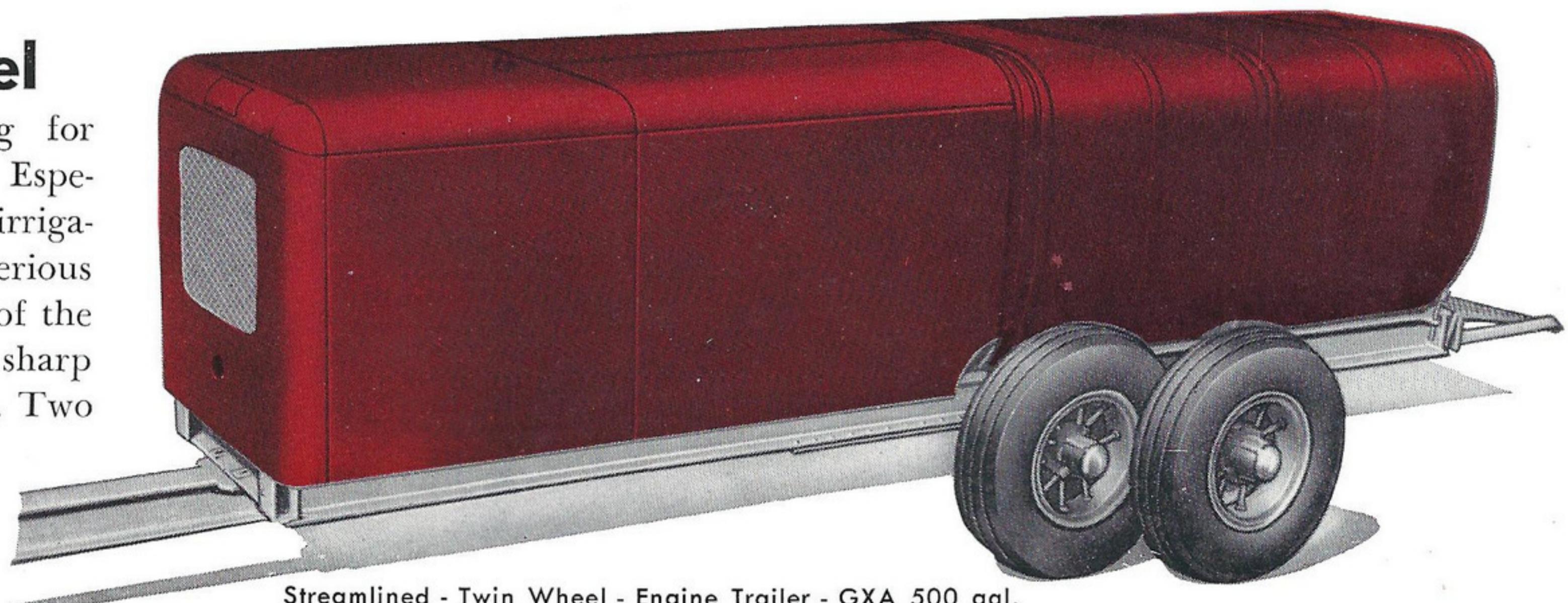
**sprayers**

# Engine Trailers

ENGINE POWERED ★ TRACTOR DRAWN

## Twin Wheel

The ideal mounting for rough or soft ground. Especially valuable where irrigation ditches present a serious problem. Close centers of the twin wheels permit sharp turning without sliding. Two rigid independent full-length axles divide the load.



Streamlined - Twin Wheel - Engine Trailer - GXA 500 gal.  
Code - GXAE50-TW-ST

Model	FX 25 gal. per min. 700 lb. pressure	AXB 35 gal. per min. 700 lb. pressure	GXA 50 gal. per min. 800 lb. pressure	YX 60 gal. per min. 800 lb. pressure
Tank Capacity (1) . . . . .	300	400	400	500
Overall Length . . . . .	132½"	132½"	139"	169"
Overall Width . . . . .	74"	87"	87"	88"
Overall Height . . . . .	56"	61"	61"	63"
Wheel Rim . . . . .	4.50x16 D.C.	4.50x16 D.C.	4.50x16 D.C.	5.50x16 D.C.
Tire Size . . . . .	7.50-16	7.50-16	7.50-16	9.00-16
Inner Tread . . . . .	44"	58"	58"	58"
Outer Tread . . . . .	66"	78½"	78½"	78½"
Ground Clearance . . . . .	12"	12"	12"	13½"
Shipping Weight . . . . .	2900	3000	3300	3500
Sales Code (2) . . . . .	FXE 30-TW	FXE 40-TW	AXB 40-TW	AXB 50-TW
			GXA 50-TW	GXA 60-TW
			YXE 50-TW	YXE 60-TW

(1) Wood tanks standard. Steel tanks optional at extra cost.

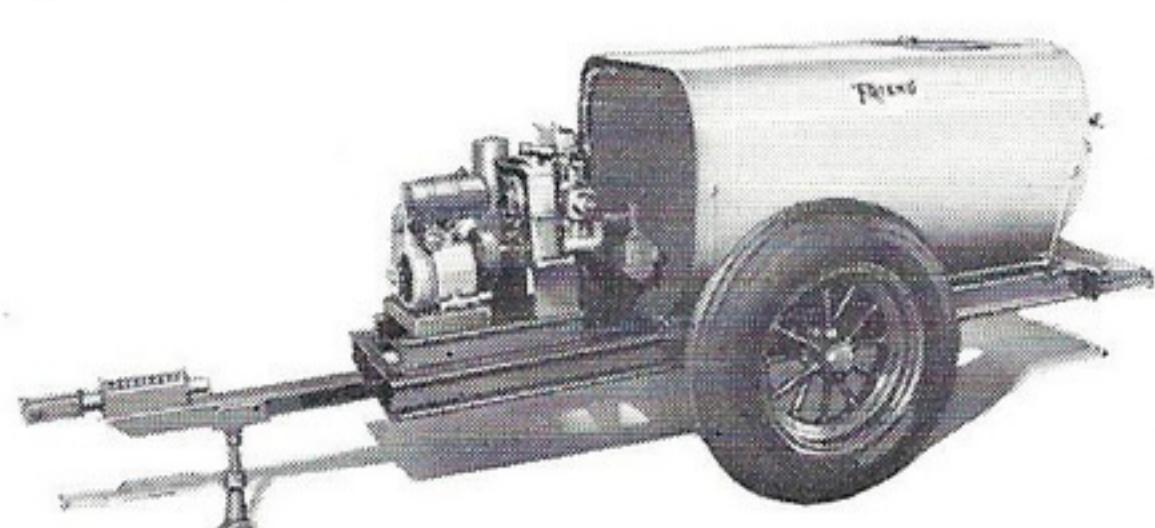
(2) Open type standard. For streamlining at extra cost, add -ST to Sales Code.

For pump and engine specifications, see pages 6 and 7.

## ALL "FRIEND" SPRAYERS ARE AVAILABLE IN OPEN STYLES

Friend Sprayers are streamlined to guard the crop — not the pump. Friend Pumps are adequately protected without the use of extra covers — but streamlined covers will protect

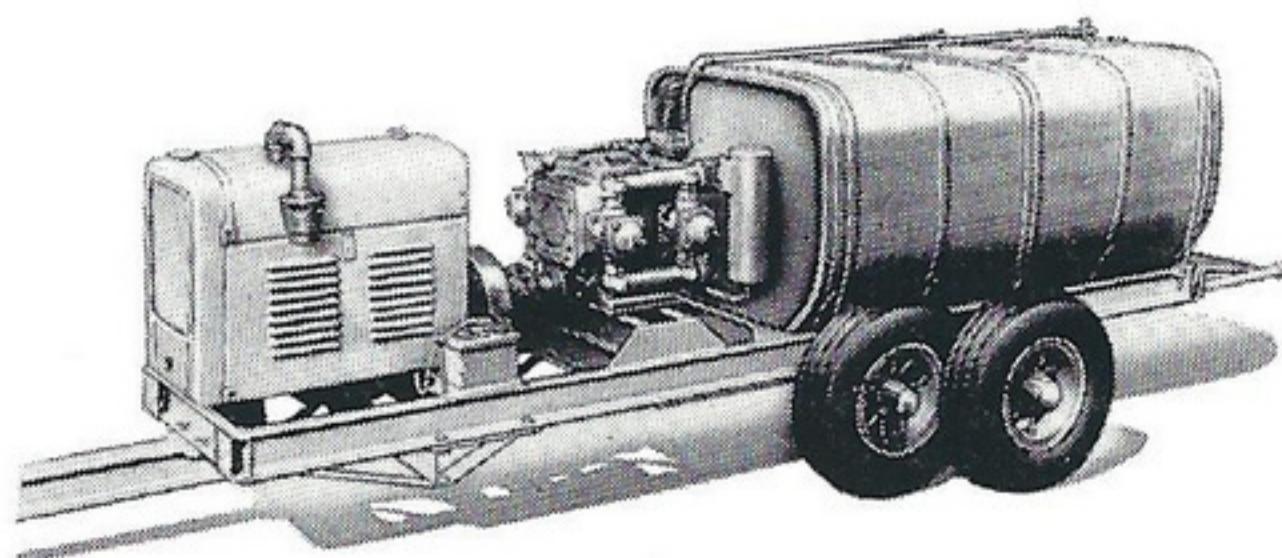
fruit and foliage as well as give a much neater appearance to the machine. Streamlined covers can be furnished for all sprayers with from 15 to 60 gallon per minute capacity.



Open Type—2 Wheel—Engine Trailer  
Code NXE30

**The Friend Pump needs no protection.** Completely sealed against dust and grit as well as spray material, these 100% dust-proof pumps can be cleaned with hose.

**Trouble-free Agitator Packing Box** is direct connected, eliminating the side pull of a chain and sprocket drive. Upkeep is reduced to practically nothing.

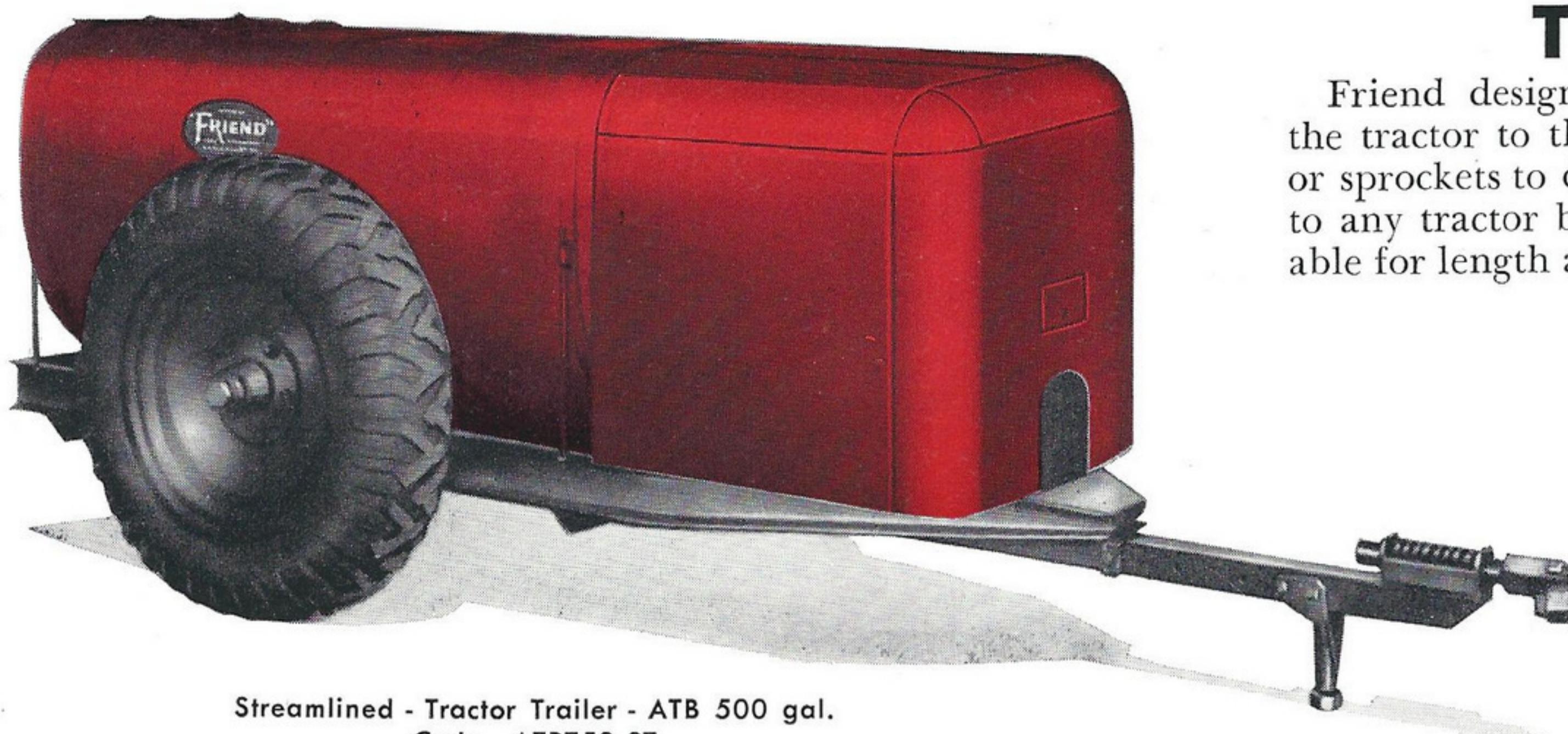


Open Type—Twin Wheel—Engine Trailer  
Code YXE50

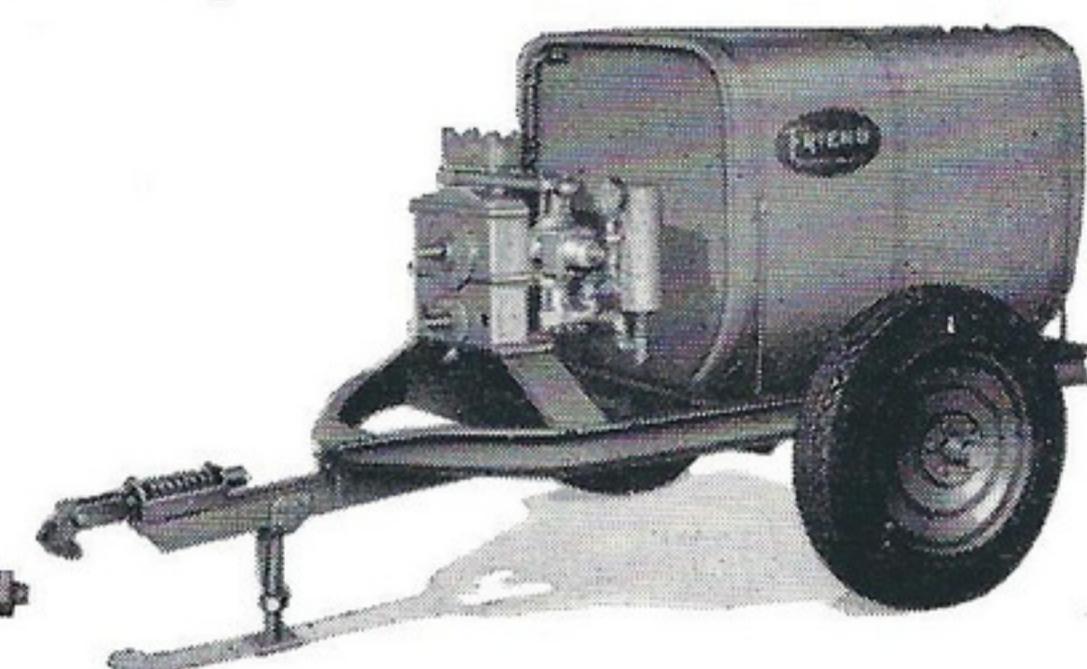


# Tractor Trailers

TRACTOR P.T.O. POWERED ★ TRACTOR DRAWN



Streamlined - Tractor Trailer - ATB 500 gal.  
Code - ATBT50-ST



Open type - Tractor Trailer - NT 200 gal.  
Code - NTT20

## Two Wheel

Friend design means direct connection from the tractor to the pump countershaft—no chains or sprockets to drag in the dust. Quickly hitched to any tractor by pole with spring hitch, adjustable for length and height.

Model	NT 15 G.P.M. 600 1b. press.	FT 20 G.P.M. 700 1b. press.	ATB 30 G.P.M. 700 1b. press.	GTA 40 G.P.M. 800 1b. press.	YT 50 G.P.M. 800 1b. press.
Tank Capacity (1)	200	300	400	500	500
Overall Length....	74"	91"	114"	132"	125"
Overall Width....	61½"	67½"	67½"	70"	75"
Overall Height....	57"	52½"	55"	55"	61"
Wheel Rim.....	4.00x16 DC	6.00x20 FB	6.00x20 FB	8.00x24 DC	8.00x24 DC
Tire Size.....	6.00-16	7.50-20	7.50-20	9.00-24	11.25-24
Tread (Normal) ...	48"	58"	58"	60"	64"
(Adjustable (2) ..	55" to 71"	58" to 74"	58" to 74"	56" to 72"	60" to 76"
Ground Clearance ..	11"	10"	10"	11"	12"
(Adjustable) ....	6" to 16"	10" to 20"	10" to 20"	11" to 23"	12" to 24"
Shipping Weight ..	1150	1600	2000	2400	2900
Sales Code (3) ....	NTT 20	NTT 30	FTT 30	FTT 40	ATBT 40
				ATBT 50	GTAT 50
				GTAT 60	YTT 50
					YTT 60

(1) Wood tanks standard. Steel tanks optional at extra cost.  
(2) Adjustable axle optional at extra cost on NT-200. Standard equipment on all others.  
(3) Open type standard. For streamlining at extra cost, add -ST to Sales Code.

For pump and engine specifications, see pages 6 and 7.

## Safety Shielded Drive Shaft

Tractor P.T.O. to Sprayer Pump



Telescopic shaft with a universal joint on each end, completely shielded for safety, makes up this integral, ball bearing mounted assembly furnished as standard equipment with every "Friend" Tractor Trailer Sprayer.

The pump is protected against drive shaft thrust as the roller bearings of the P.T.O. countershaft are made to take thrust loads as well as radial loads. A common "trouble point" has been eliminated by "Friend" engineering.



**sprayers**

# Tractor Trailers

TRACTOR P.T.O. POWERED ★ TRACTOR DRAWN

## SPECIAL TYPES

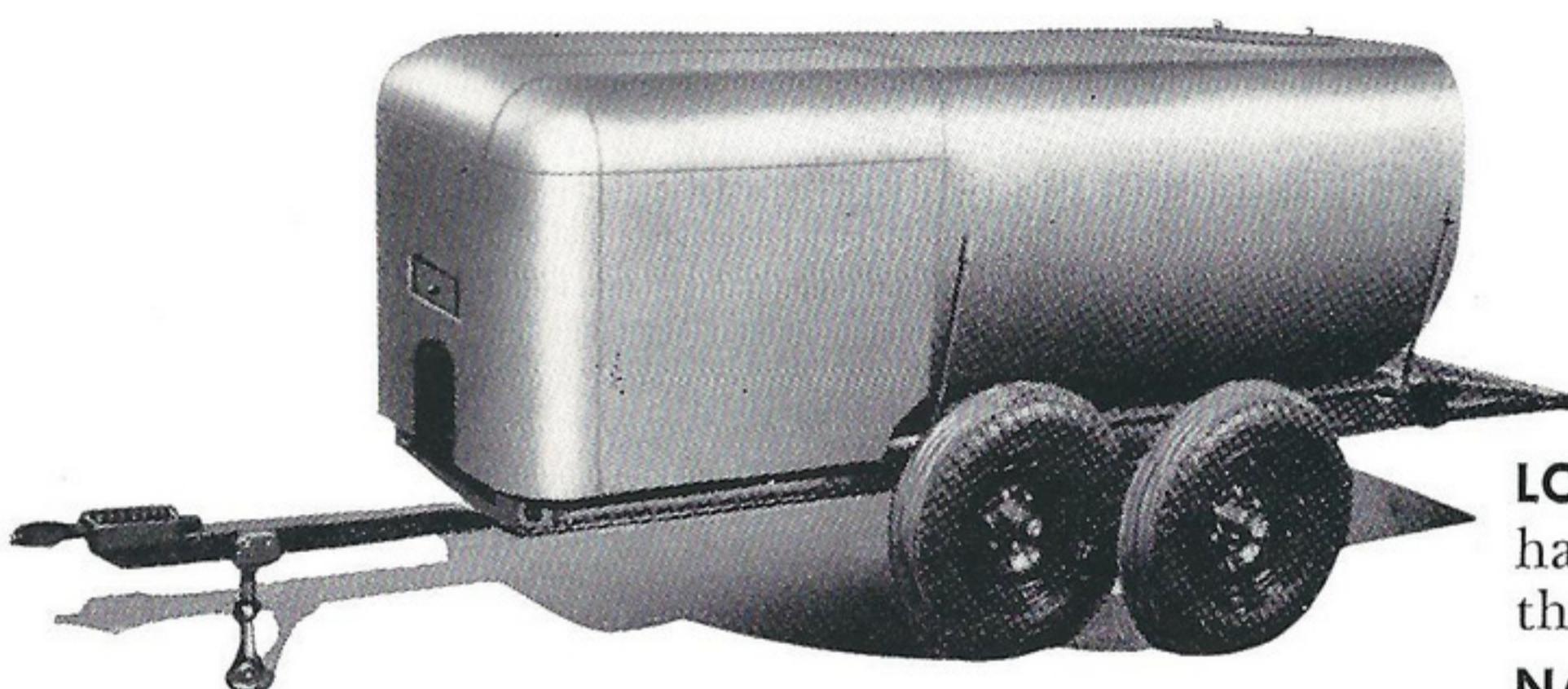
### Twin Wheel Type

Model	FT	20 gal. per min. 700 lb. pressure	ATB	30 gal. per min. 700 lb. pressure	GTA	40 gal. per min. 800 lb. pressure	YT	50 gal. per min. 800 lb. pressure
Tank Capacity (1) . . . . .	400	500	400	500	500	600	500	600
Overall Length . . . . .	114"	132"	114"	132"	123"	141"	125"	143"
Overall Width . . . . .	73"	74"	73"	74"	87"	87"	87"	87"
Overall Height . . . . .	55"	56"	55"	56"	59"	59"	59"	59"
Wheel Rim . . . . .	4.50x16D.C.	4.50x16D.C.	4.50x16D.C.	4.50x16D.C.	4.50x16D.C.	4.50x16D.C.	4.50x16D.C.	4.50x16D.C.
Tire Size . . . . .	6.50-16	7.50-16	6.50-16	7.50-16	7.50-16	7.50-16	7.50-16	7.50-16
Inner Tread . . . . .	48"	48"	48"	48"	58"	58"	58"	58"
Outer Tread . . . . .	66"	66"	66"	66"	78½"	78½"	78½"	78½"
Ground Clearance . . . . .	11"	12"	11"	12"	12"	12"	12"	12"
Shipping Weight . . . . .	2100	2300	2300	2500	2800	3000	3200	3400
Sales Code (2) . . . . .	FTT40-TW	FTT50-TW	ATBT40-TW	ATBT50-TW	GTAT50-TW	GTAT60-TW	YTT50-TW	YTT60-TW

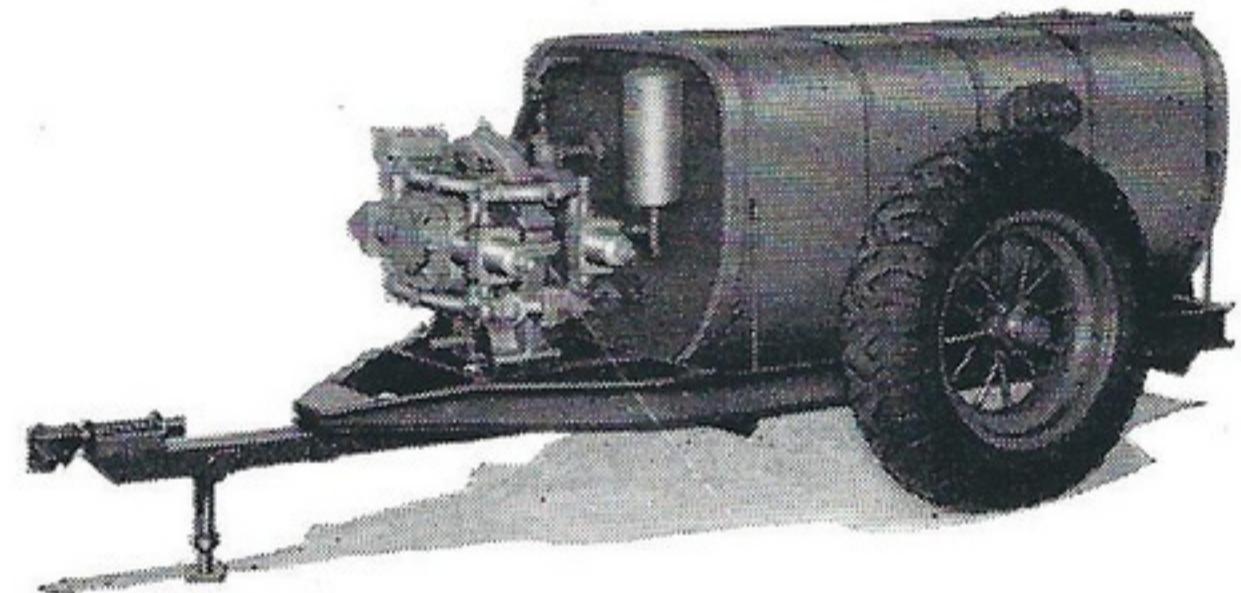
(1) Wood tanks standard. Steel tanks optional at extra cost.

(2) Open type standard. For streamlining at extra cost, add -ST to Sales Code.

For pump and engine specifications, see pages 6 and 7.



Streamlined - Twin Wheel - Tractor Trailer - FT 400 gal.  
Code - FTT40-TW-ST



Open type - Tractor Trailer - ATB 500 gal. - Narrow  
Code - ATBT50-NR

**LOW CLEARANCE** models are for use in orchards with low-hanging fruit and foliage. The tank is 6 to 12 inches lower than those of most tractor trailer sprayers.

**NARROW** models have proved highly successful in spraying citrus groves, vineyards, hops, and other close-planted crops. Both the tread and over-all width are less than on ordinary sprayers of the same tank capacity.

Type	Low Clearance						Narrow			
Model	NT	15 G.P.M. 600 lb. press.	FT	20 G.P.M. 700 lb. press.	ATB	30 G.P.M. 700 lb. press.	FT	20 G.P.M. 700 lb. press.	ATB	30 G.P.M. 700 lb. press.
Tank Capacity (1) . . . . .	200	300	300	400	300	400	400	500	500	600
Overall Length . . . . .	104"	97"	97"	114"	97"	114"	117"	136"	136"	150"
Overall Width . . . . .	56"	72"	72"	72"	72"	72"	67"	67"	67"	73"
Overall Height . . . . .	46"	49"	49"	49"	49"	49"	58"	58"	58"	58"
Wheel Rim . . . . .	4.00x16 DC	6.00x20 FB	6.00x20 FB	6.00x20 FB	6.00x20 FB	6.00x20 FB	8.00x24 DC	8.00x24 DC	8.00x24 DC	8.00x24 DC
Tire Size . . . . .	6.00-16	7.50-20	7.50-20	7.50-20	7.50-20	7.50-20	9.00-24	9.00-24	9.00-24	11.25-24
Tread . . . . .	48"	62"	62"	62"	62"	62"	56"	56"	56"	60"
Ground Clearance . . . . .	11"	10"	10"	10"	10"	10"	12"	12"	12"	12"
Shipping Weight . . . . .	1200	1600	1900	2000	2100	2200	2050	2250	2450	2650
Sales Code (3) . . . . .	NTT	NTT	FTT	FTT	ATBP	ATBP	FTT	FTT	ATBT	ATBT
	20-LC	30-LC	30-LC	40-LC	30-LC	40-LC	40-NR	50-NR	50-NR	60-NR

(1) Wood tanks standard. Steel tanks optional at extra cost.

(3) Open type standard. Streamlining not available on Low Clearance and Narrow models.

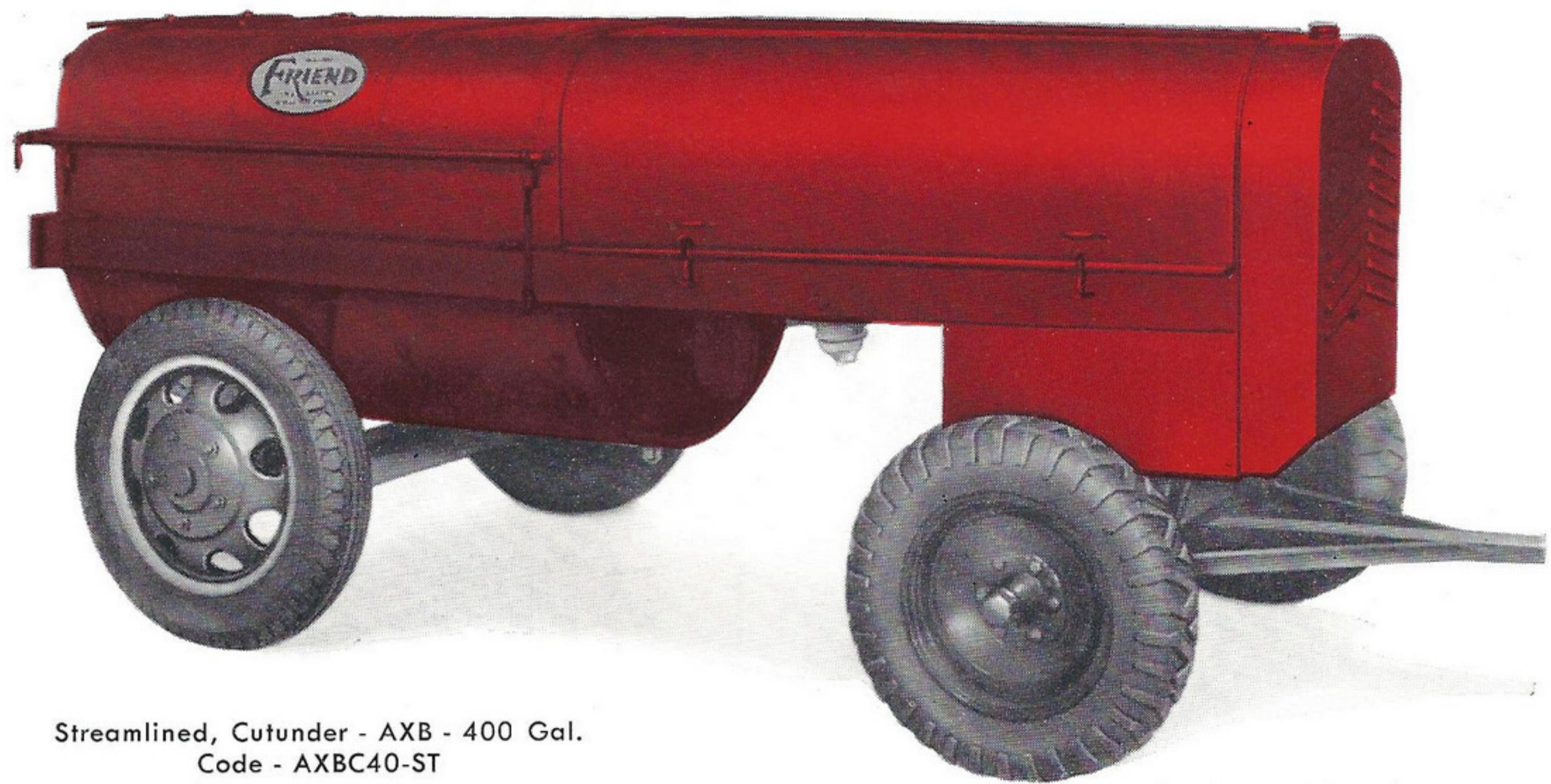
For pump and engine specifications, see pages 6 and 7.



# Cutunder Style

ENGINE POWERED ★ TRACTOR DRAWN

## Four Wheel



Model	KA 12 G.P.M. 400 lb. press.	NX 15 gal. per min. 600 lb. pressure	FX 25 gal. per min. 700 lb. pressure	AXB 35 gal. per min. 700 lb. pressure
Tank Capacity (1).....	200	200	300	400
Overall Length (2).....	96"	96"	116"	129"
Overall Width.....	58"	58"	58"	74"
Overall Height.....	52"	52"	52"	60"
Front Wheel Rim.....	4.00 x 16 D.C.	4.00x16 D.C.	4.00x16 D.C.	4.00x16 D.C.
Front Tire.....	6.00-16	6.00-16	6.00-16	6.00-16
Rear Wheel Rim.....	4.00 x 16 D.C.	4.00x16 D.C.	6.00x20 F.B.	6.00x20 F.B.
Rear Tire.....	6.00-16	6.00-16	7.50-20	7.50-20
Wheel Tread.....	50"	50"	50"	64"
Ground Clearance.....	9"	9"	10"	11"
Shipping Weight.....	1750	1800	2200	3500
Sales Code (3).....	KXC 20	NXC 20	NXC 30	FXC 40
				AXB 40
				AXBC 50

(1) Wood tanks standard. Steel tanks optional at extra cost.

(2) Length of hitch not included.

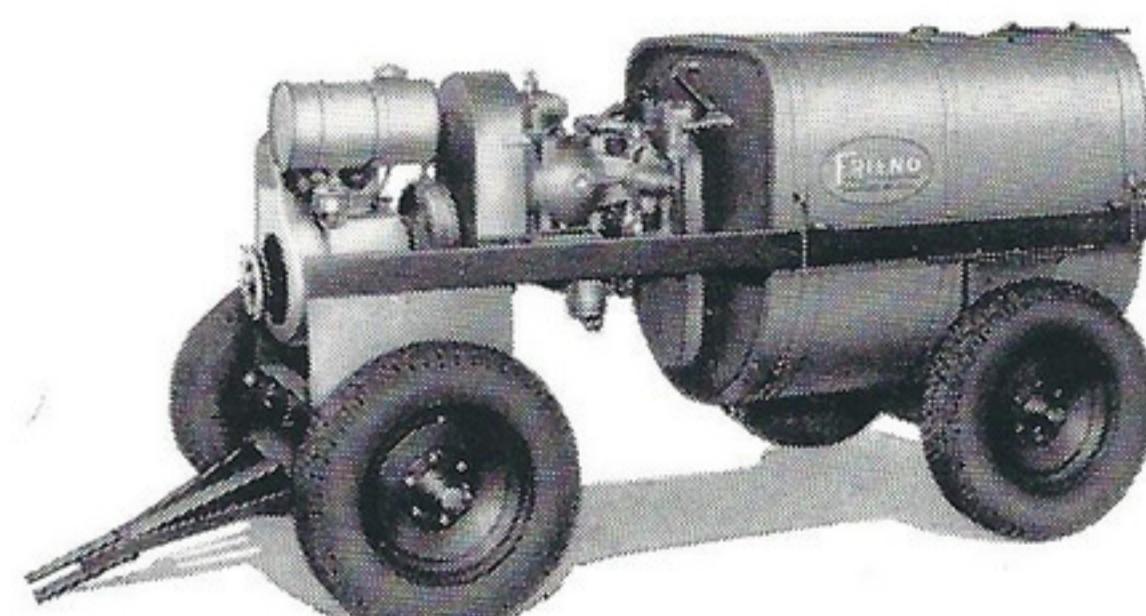
(3) Open type standard. For streamlining at extra cost, add -ST to Sales Code.

For pump and engine specifications, see pages 6 and 7.

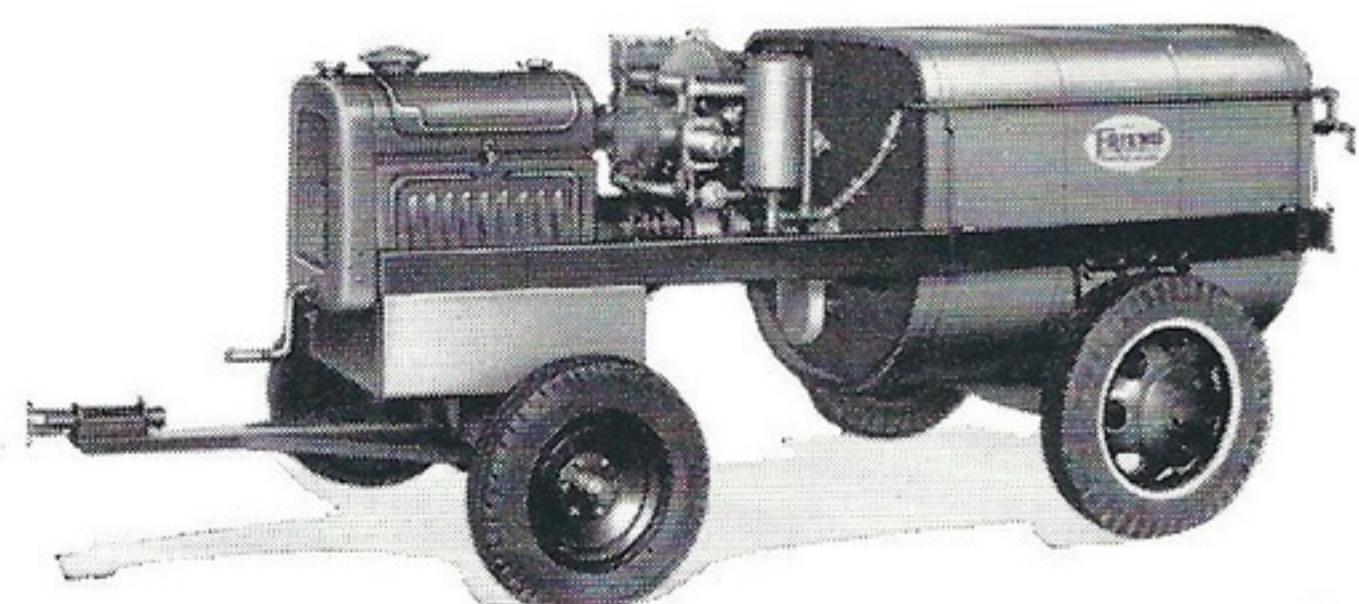
## Cutunder Sprayers

The cutunder 4-wheel sprayer was originated by Friend. The high frame permits the front wheels to cut clear under so that the sprayer can be turned in its own length. Rear axle is adjustable to accommodate various wheel sizes other than the standard sizes listed above. Direct drive from engine to pump on all models. Welded one-piece frame and roller bearing wheels. All sizes can be furnished with or without streamline covers and with steel or wood tanks.

Here is a complete sprayer with its own power unit and wheel mounting, always ready to give instant service whether drawn by tractor, truck or team.



Open type - Cutunder - KA 200 gal.  
Code KXC20



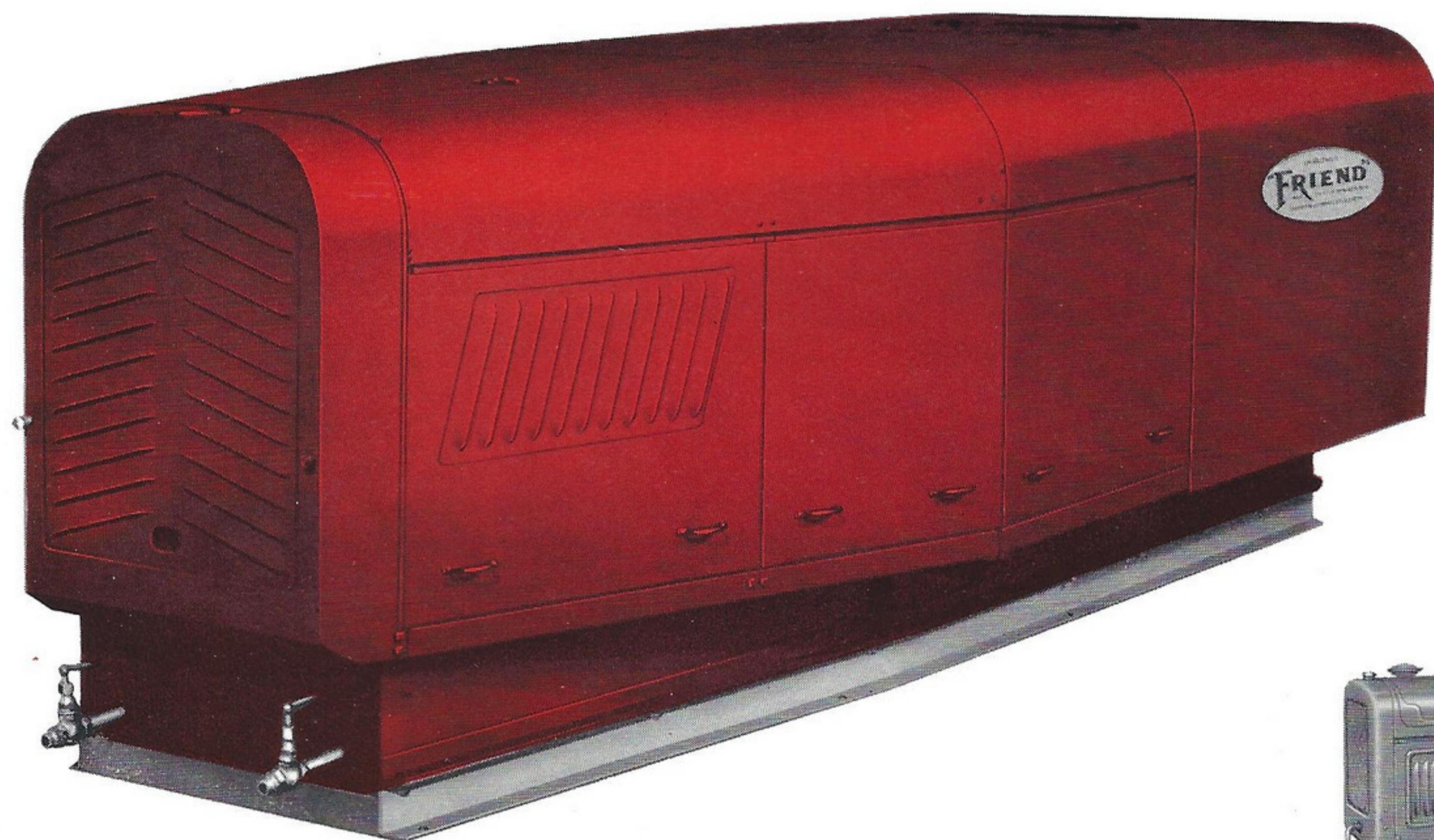
Open type - Cutunder - AXB 400 gal.  
Code AXBC40



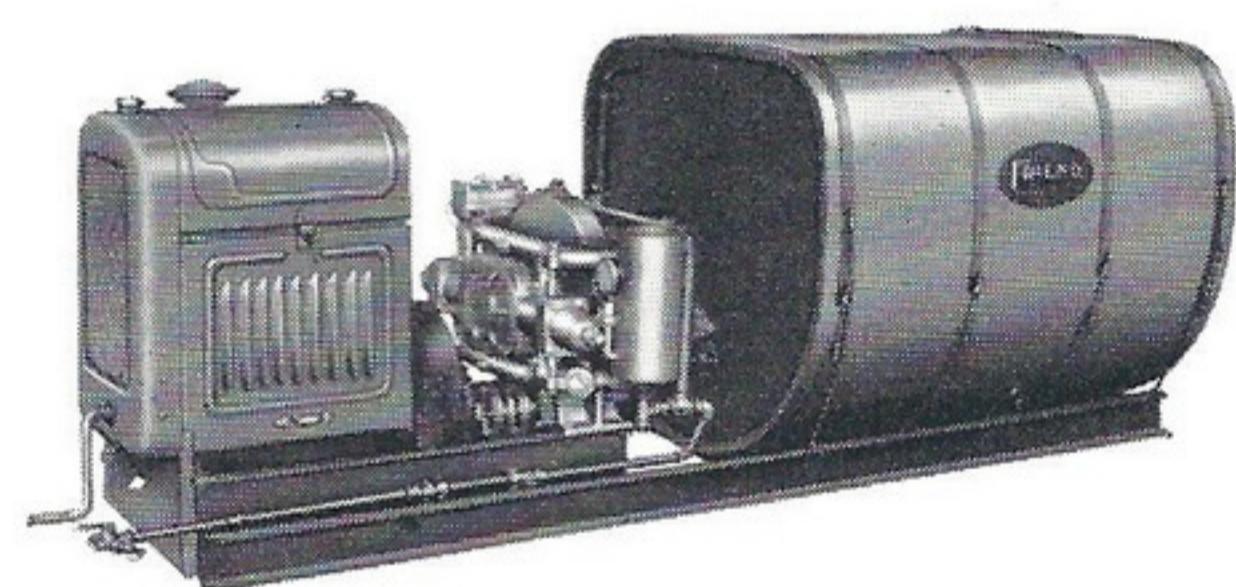
**sprayers**

# Skid Style

ENGINE POWERED ★ SKID MOUNTED



Streamlined, Skid, YX 500 gal.  
Code - YXS50-ST



Open type - Skid - AXB 400 gal.  
Code - AXBS40

Model	K	6 gal. per min. 400 lb. pressure	KA	12 gal. per min. 400 lb. pressure	NX	15 gal. per min. 600 lb. pressure
Tank Capacity (1).....	100	150	150	200	200	300
Overall Length.....	86"	86"	86"	102"	85"	107"
Overall Width.....	37"	37"	37"	42"	44"	44"
Overall Height.....	26"	34"	34"	36"	41"	41"
Frame Length.....	85½"	85½"	85½"	101"	85"	107"
Frame Width.....	22½"	22½"	22½"	25"	36"	38½"
Shipping Weight.....	650	720	935	1040	1160	1260
Sales Code (2).....	KS 10 †	KS 15 †	KXS 15 †	KXS 20 †	NXS 20	NXS 30

(†) Streamlining not available on models K and KA.

Model	FX	25 gal. per min. 700 lb. pressure	AXB	35 gal. per min. 700 lb. pressure	GXA	50 gal. per min. 800 lb. pressure	YX	60 gal. per min. 800 lb. pressure
Tank Capacity (1) .....	300	400	400	500	500	600	500	600
Overall Length.....	132½"	132½"	134"	155"	169"	187"	169"	187"
Overall Width.....	45"	51"	51"	51"	51"	51"	51"	51"
Overall Height.....	42"	45"	45"	45"	45"	45"	45"	45"
Frame Length.....	131"	131"	134"	156"	168"	186"	168"	186"
Frame Width.....	36½"	36½"	40"	40"	39½"	39½"	39½"	39½"
Shipping Weight .....	2050	2150	2600	2800	3200	3400	3600	3800
Sales Code (2).....	FXS 30	FXS 40	AXBS 40	AXBS 50	GXAS 50	GXAS 60	YXS 50	YXS 60

(1) Wood tanks standard. Steel tanks optional at extra cost.

(2) Open type standard. For streamlining at extra cost, add -ST to Sales Code.

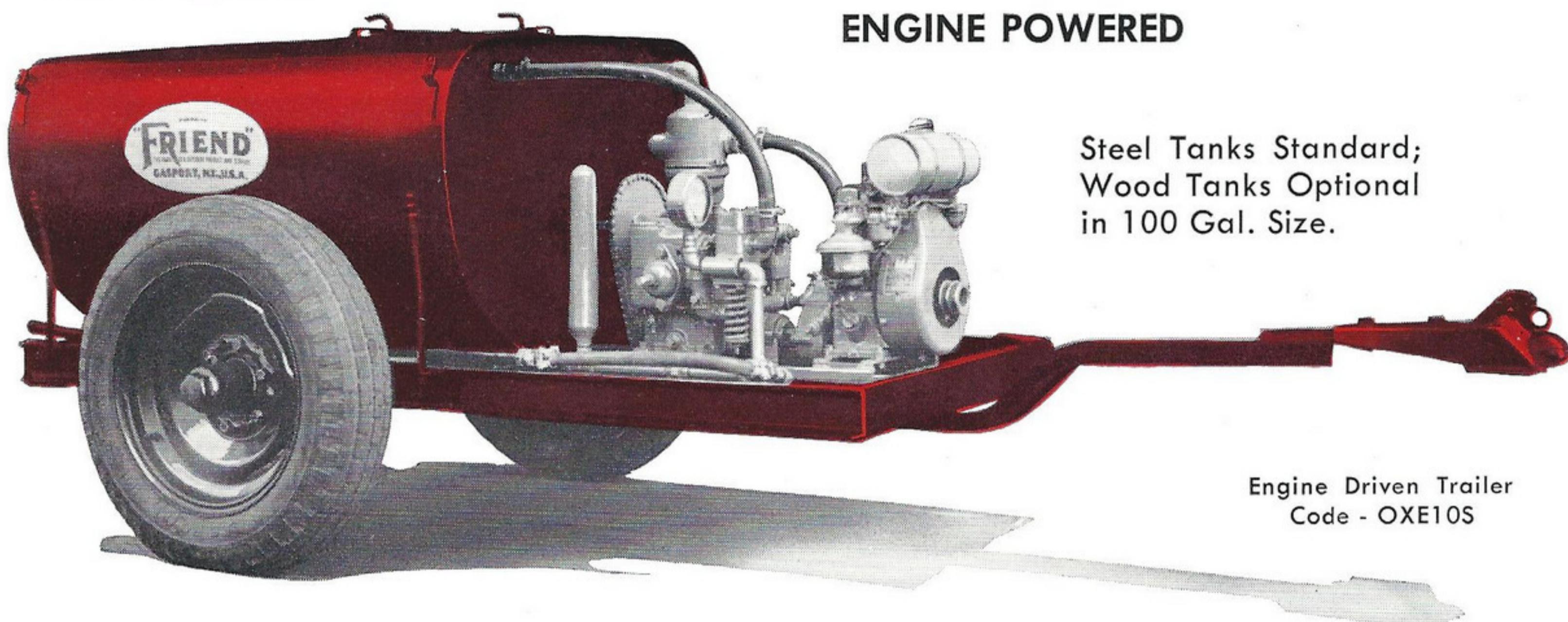
For pump and engine specifications, see pages 6 and 7.



# All-Purpose Sprayers

Model OX Pump ★ 3 1/2 gpm ★ 350 lb. pressure

## ENGINE POWERED



Steel Tanks Standard;  
Wood Tanks Optional  
in 100 Gal. Size.

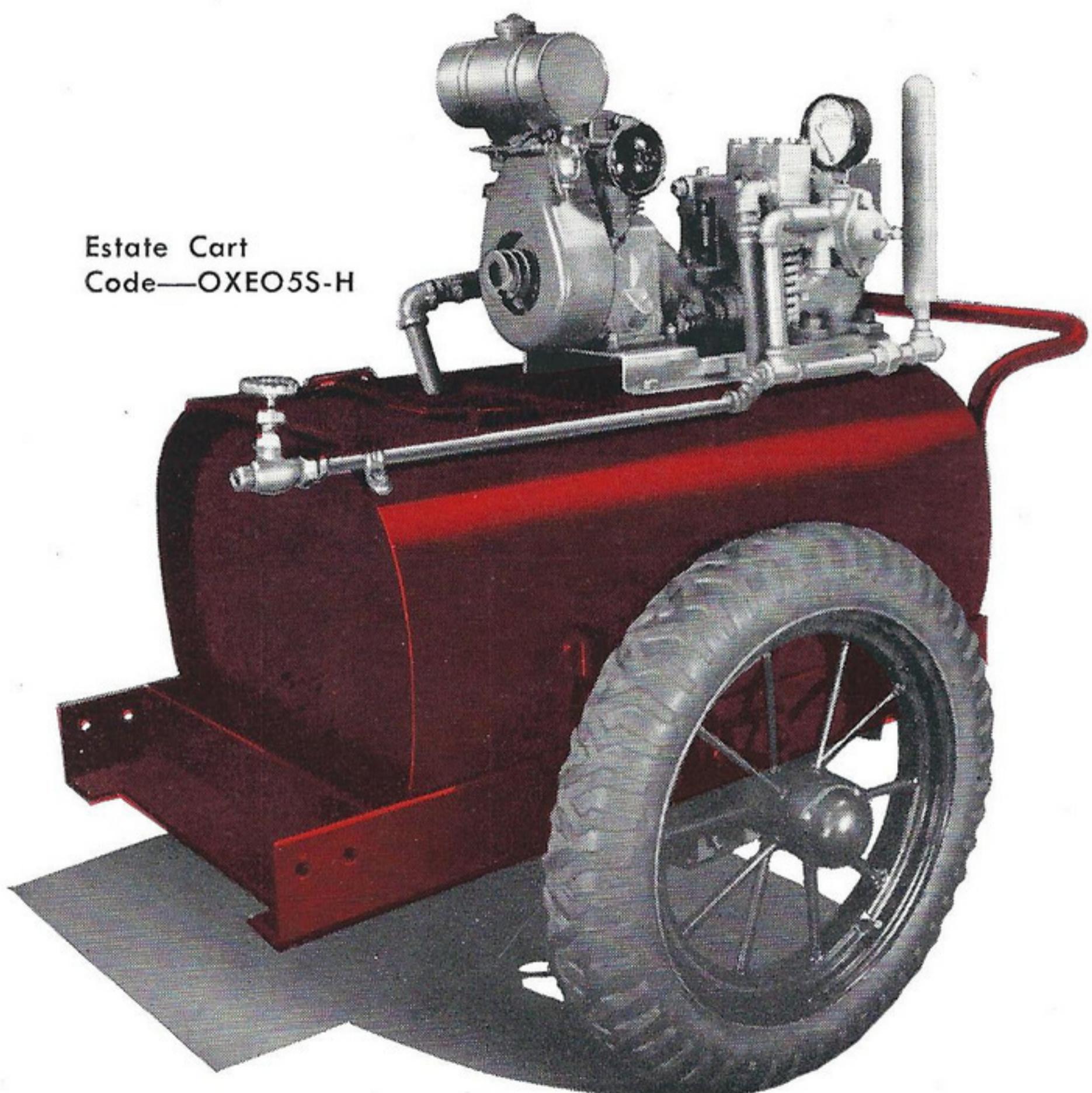
Engine Driven Trailer  
Code - OXE10S

	Cart	Engine Trailer	Skid
Tank Capacity.....	50	50	100
Overall Length.....	44"	44"	74"
with Handle.....	52 1/2"	—	—
with Drawbar.....	—	73 1/2"	—
Overall Width.....	39"	39"	47"
Overall Height.....	47 1/2"	47 1/2"	37"
Wheel Rim.....	3.00 x 18 D.C.	3.00 x 18 D.C.	4.00 x 16 D.C.
Tire Size.....	4.00 x 18	4.00 x 18	6.00 x 16
Tread (Normal).....	31"	31"	40" (1)
Ground Clearance.....	10"	10"	11" (1)
Skid Length.....	—	—	—
Skid Width.....	—	—	—
Shipping Weight .....	575	600	675
Sales Code.....	OXE05S-H	OXE05S	OXS05S
		OXE10S	OXS10S

(1) Adjustable axle optional at extra cost. Tread 55" to 71"; Ground Clearance, 6" to 16".

For pump and engine specifications, see page 6.

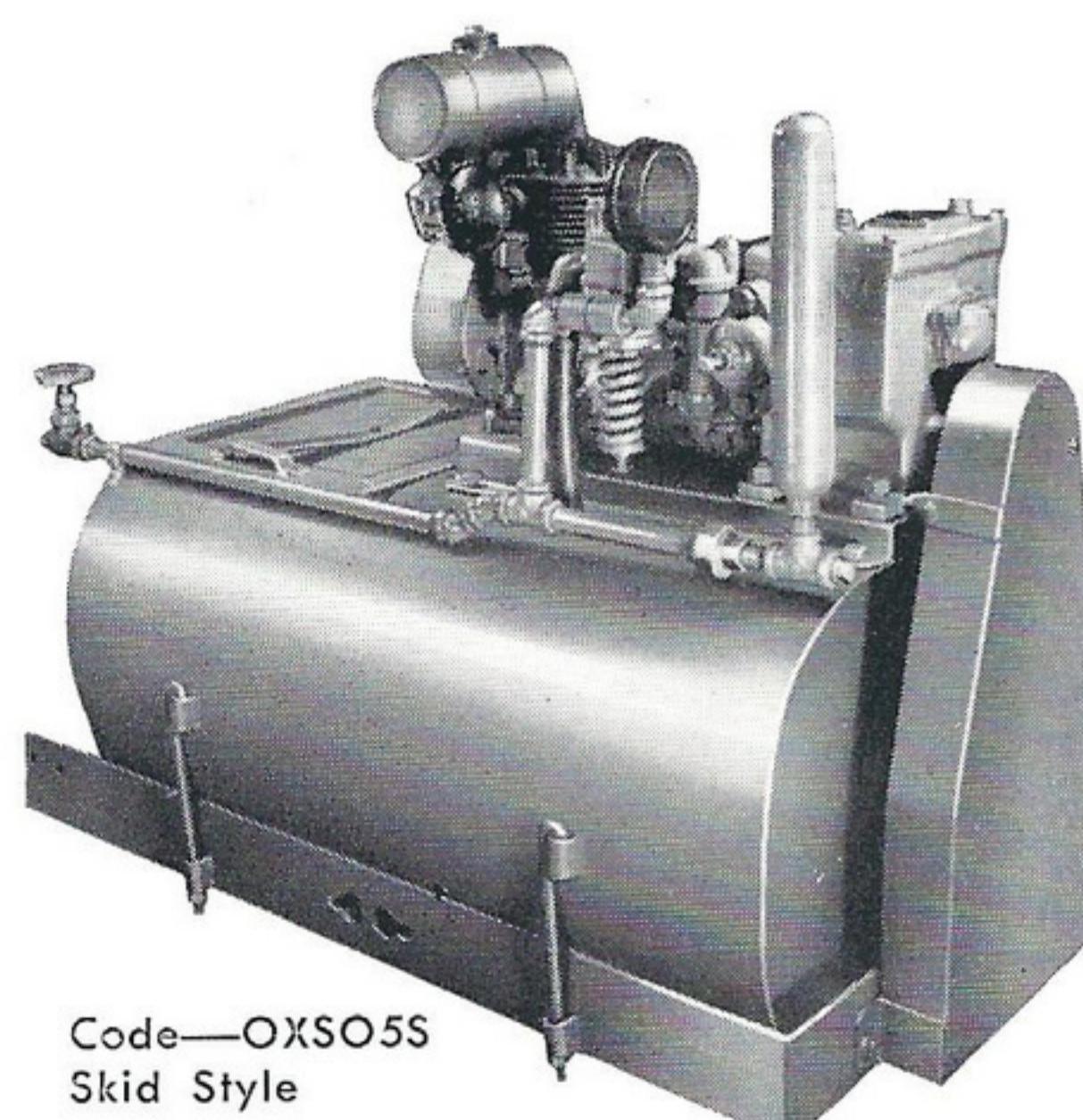
Estate Cart  
Code—OXE05S-H



All-Purpose Sprayers are complete spraying machines with power, but so light and compact that they can be drawn by hand or small tractor. Highly favored for clubs and estates and also the choice of many small commercial growers. Though small they are built to Friend standards of quality and efficiency.

The Estate Cart has the motor-pump unit mounted on the tank in perfect balance . . . easily pushed or drawn.

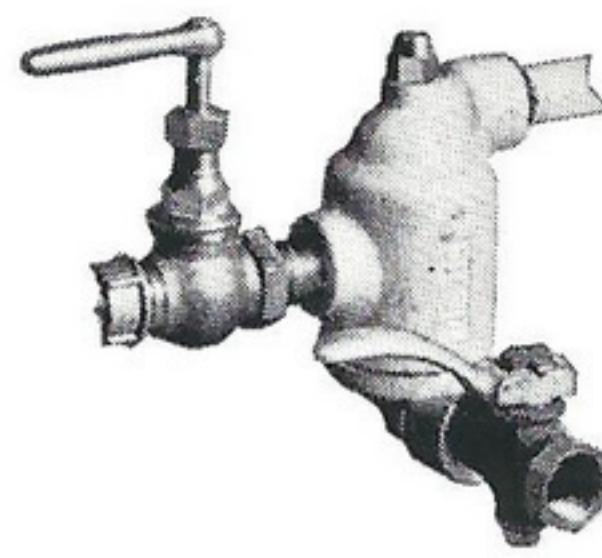
Skid style is a complete sprayer ready to load on truck or wagon. Engine, pump and tank are mounted on substantial one-piece welded steel frame.



Code—OXS05S  
Skid Style



# Spraying Accessories

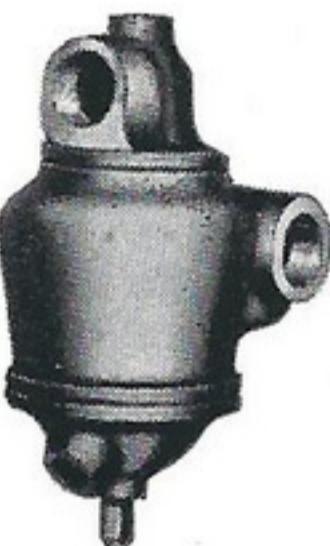


## "Friend" Line Filters

**Pressure Line Filter** Prevents oversize particles of spray material from reaching the spray nozzles or gun head. Has fine mesh cylindrical brass filter screen. Self cleaning—by closing discharge valve and opening drain valve, the flow through the filter screen is reversed, and any sediment is carried out.

**Suction Line Filter.** Spray solution enters from the suction line *at a tangent, whirling in the filter body* and throwing heavy solids to sides, to settle in bottom. Then solution passes *upward* through the filter screen to suction manifold of pump.

The large brass strainer is amply oversize to give extra straining capacity. (Filter for 1½-inch suction lines has a screen with 16.4 square inches of free opening—8 times the pipe area.)



## "Friend" Tank Filler



**"Friend" Detachable Tank Filler** (above) mounts over the filling hole. Instantly detachable by a sidewise pull—nothing to unscrew or unfasten. The top of the tank is free from any projection when operating the sprayer. Made in two sizes for pump capacities from 3 to 60 gallons per minute, the largest giving approximately 100 gallons per minute with a 15 ft. lift.

## Hose and Hose Fittings

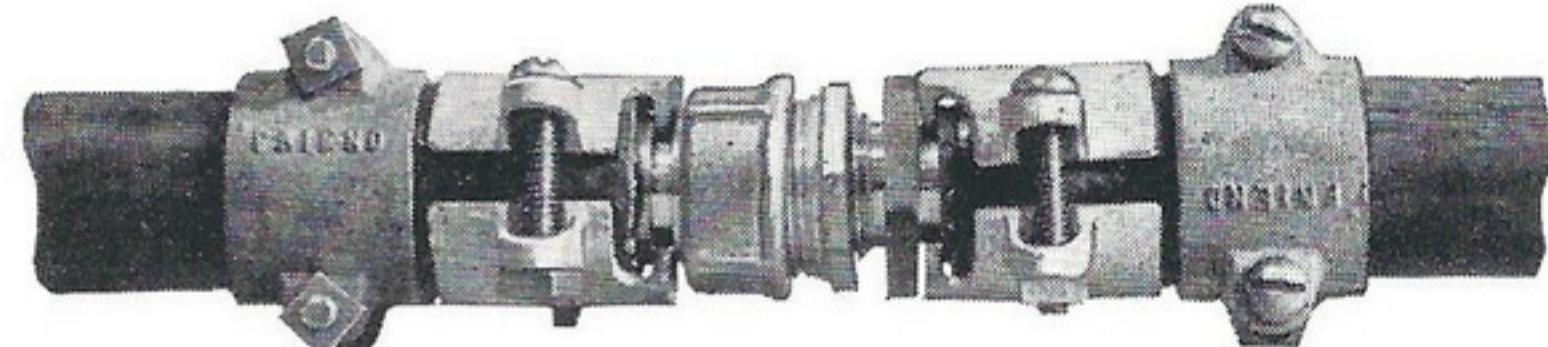


**"Friend" High Duty 2 braid Spray Hose.** Guaranteed for working pressures up to 800 lbs. Carried in ⅜", ½" and ¾" size.

**Lead hose gasket**—for ⅜", ½" ⅝" & ¾" spray hose. Code Cap (AX371B).

**Transfer fitting, Pipe and Hose Connection:** all brass, ¾" female hose thread with ¼" male pipe thread, for use with small shut-offs or nozzles. Code Pansy (LA467).

**Hose Coupling Cap**, all brass: ¾" female hose thread. Code Panth (WE1007).



**Extra heavy coupling, twin clamp style**, for large high-pressure sprayers. For ¾" hose. Machined bore.



**Drain cock**, for draining and low pressure service. ¾" male pipe by ¾" male hose. Code Shave (BX417C).

**Quick-acting Lever Gate Shut-off**, ¼ turn. ¾" female pipe thread both ends. Code Shapl (FX1260). 1" female pipe thread both ends. Code Shafe (YX1260). (Not shown).

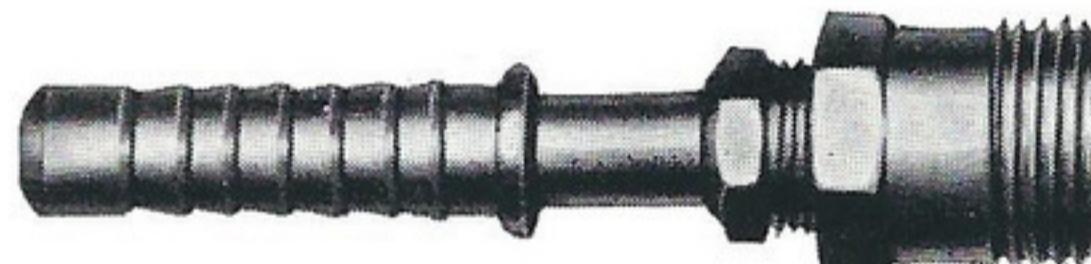


**Hose bands**, all brass, ¾" and under, 1" and over, galvanized. For all hose sizes listed below—right-hand column shows maximum diameter the hose band will take:

Hose band size	Max. Dia. Band takes	Hose band size	Max. Dia. Band takes
⅜"—3 ply	¾"	1"—4 ply	1 7/16"
½"—2 ply	7/8"	1 ¼"—3 ply	1 11/16"
½"—3 ply	1 5/16"	1 ¼"—4 ply	1 13/16"
¾"—4 ply	1 3/16"	1 ½"—4 ply	2 1/8"
1"—3 ply	1 3/8"	2"—5 ply	2 7/8"
		2 ¾"—3 or 4 ply	3 1/4"



**Hose and pipe connection**, all brass, ¾" hose shank and ¼" male pipe thread. Code Peper (SB658). ½" hose shank and ¼" male pipe thread. Code Pikle (SB658B).



**Swivel Hose Coupling**. All brass, for ½" hose. Plain bearing. Gives protection for hose against twisting. Code Sovol (FX1530).



**Swivel Hose Coupling**. All brass, ¾" hose threads, plain bearing. Code Sivel (DXA-1530).



**Quick-acting Single Shut-off**, all brass, with quick-rising stem that makes only 1 ½ turn from wide open to shut. With ¾" male hose thread and ¾" female pipe thread, fibre disc shut-off. Code Shark (AX16C).



With ¾" female pipe threads both ends, stainless steel plug type shut-off and replaceable stainless steel seat. Code Shary (AXB1502D).

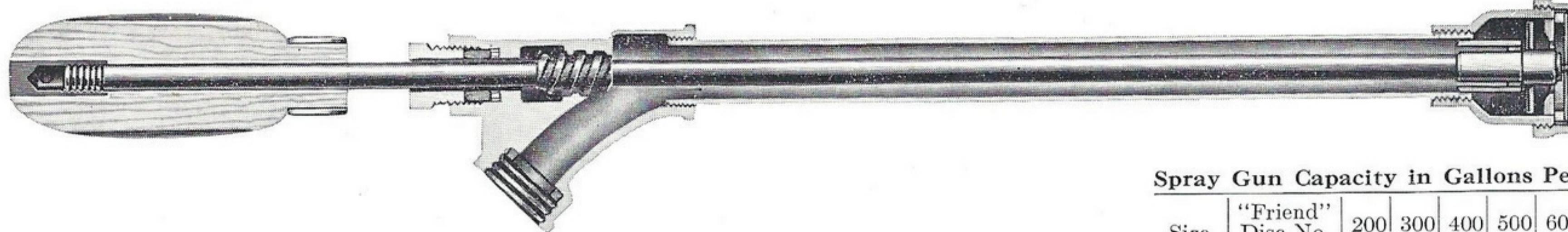


**Two-way shut-off**, all brass, ¾" male hose threads and ¾" female pipe threads. With stainless steel plug type shut-off and replaceable stainless steel seat. Code Shamo (BX466D).



sprayers

# Spraguns, Brooms and Nozzles

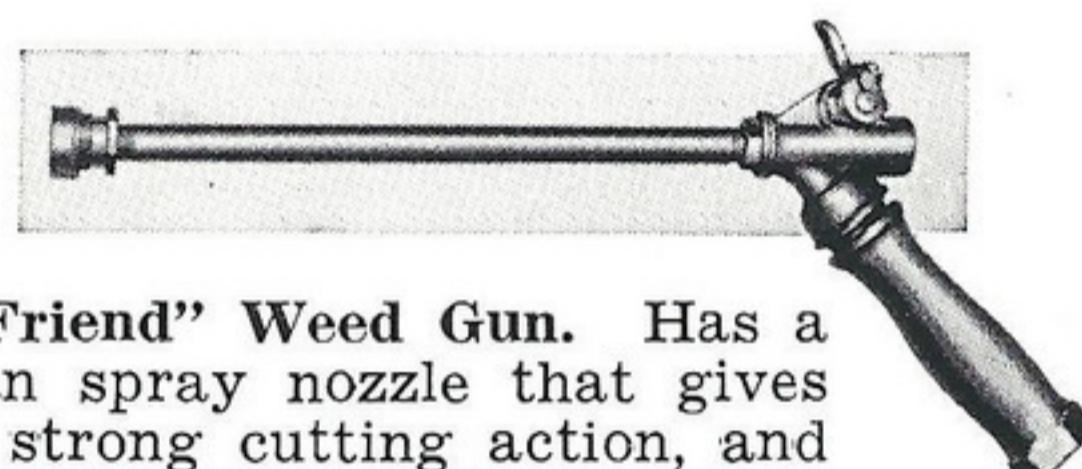


## the Most Popular "Friend" Spraygun 16-Inch Pecan Gun

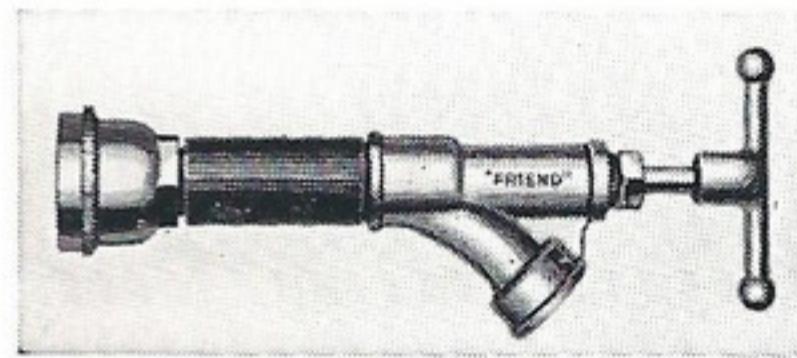
As the name suggests, this gun was originally developed by us for the pecan grower—but proved so superior that it became the favorite for all orchard spraying. Special head gives the maximum height obtainable with a finely di-

vided spray, and the same character of spray at all adjustments.

**Standard length:** Overall 26", barrel 16", Code GUPEC (LCPA354C). With 42" barrel, overall length, 52". Code GUNPE (LCP354B).



**"Friend" Weed Gun.** Has a fan spray nozzle that gives a strong cutting action, and thorough penetration. Pistol grip, and easy operating thumb control shut-off. 10" barrel. Code GUSTY (LR354).



**"Friend" Short Pecan or Vegetable Gun,** for tree spraying with mast, or washing of vegetables under high pressure. Same adjustment of spray as on standard Pecan gun. Over-all length 10". Code GUMVG (LV354B).

Size	"Friend" Disc No.	Spray Gun Capacity in Gallons Per Minute						
		200	300	400	500	600	700	800
1/16	4	1.2	1.4	1.6	1.9	2.1	2.2	2.5
5/64	5	1.8	2.2	2.5	2.8	3.1	3.3	3.5
3/32	6	2.5	3.	3.4	3.8	4.3	4.6	4.8
7/64	7	3.3	4.	4.6	4.8	5.3	5.8	6.1
1/8	8	4.3	5.5	6.1	6.9	7.4	8.	8.5
9/64	9	4.9	5.6	6.5	7.7	8.4	9.	9.6
5/32	10	6.8	8.3	9.6	10.6	11.5	12.3	13.
11/64	11	7.6	10.	10.5	12.1	13.	13.9	14.7
3/16	12	9.4	11.2	12.7	14.5	15.6	16.7	17.7
13/64	13	11.4	13.1	15.3	17.	18.6	19.9	21.1
7/32	14	12.3	14.8	17.2	19.2	20.9	22.4	23.7
15/64	15	14.1	16.9	19.7	22.3	24.3	26.	27.6
1/4	16	15.4	18.6	21.5	24.7	26.9	28.8	30.5
17/64	17	18.1	21.6	24.5	27.7	30.2	32.3	34.2
5/16	20	22.4	26.9	30.7	34.7	37.8	40.4	42.8

**"Friend" Park Gun** (below) is the same as the Pecan gun, but has an extension cap tip, and no whirl plate. Used where greater height is needed, with a more solid stream. Standard equipment includes whirl plate and cap to convert to Pecan gun. With 42" barrel, Code GUNER (LCP354C). With 16" barrel, Code GUNCO (LCPA354D).



## Detachable - Nozzle Broom



Use this head either *with 6 or 4 nozzles*. Any time you want a 4-nozzle head, just back off the two end nozzles and replace with pipe plugs.

**Detachable Nozzles** save the expense of replacing entire head if a nozzle goes bad. Another "Friend" economy feature.

"Friend" Brooms give *quick coverage with fine spray*, combined with *large capacity*. Ideal for covering a large area with fine mist.

With 3 nozzles, 48" barrel, screw shutoff, code Vibst (L3P354N).

Same with 4 nozzles, code Vibrm (L4P354N).

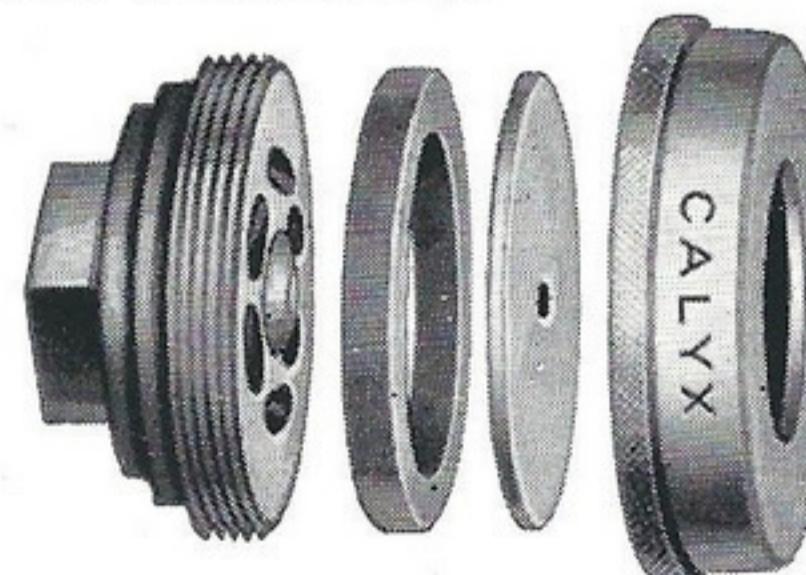
Same with 6 nozzles, code Vibro (L6P354E).

Same with 8 nozzles, code Vibrs (L8P354D).

**Short Virginia brooms** with 18" pipe; screw shut-off: 3-nozzle, code Vibsg. 4 nozzle, code Vibsh.

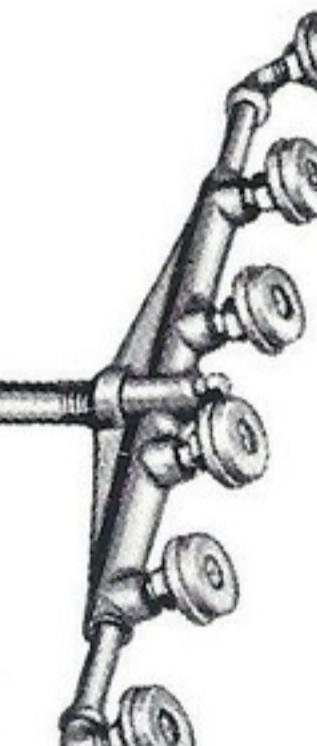


**"Friend" Weed Nozzle:** Gives a flat fan type spray, 80° angle, at about 40 lb. pressure. .039 or .059 orifice size. Code Weeda (SBW660A).



**"Friend" Calyx nozzle:** Has stronger projective power and narrower distribution than Original "Friend" Nozzle. Very popular for orchard spraying. Straight, code Nutme (LG3D). 45° angle, code Night (LE3).

No. Nozzles	Disc Size	Broom Discharge Gals. Per Min.						
		200	300	400	500	600	700	800
3	3	1.8	2.3	2.6	2.9	3.1	3.4	3.6
3	4	3.6	4.3	4.9	5.4	5.8	6.2	6.4
3	5	4.8	6.1	7.0	7.8	8.5	9.1	9.6
4	3	2.4	3.0	3.4	3.8	4.2	5.5	4.8
4	4	4.8	5.8	6.5	7.1	7.7	8.2	8.6
4	5	6.4	8.1	9.3	10.3	11.3	12.1	12.8
6	3	3.6	4.5	5.2	5.7	6.2	6.7	7.2
6	4	7.2	8.7	9.8	10.7	11.6	12.2	12.8
6	5	9.6	12.1	13.9	15.5	17.0	18.2	19.2
8	3	4.8	6.0	6.9	7.6	8.3	9.0	9.6
8	4	9.6	11.5	13.0	14.3	15.5	16.3	17.2
8	5	12.8	16.1	18.5	20.6	22.6	24.2	25.6



6-nozzle and 4-nozzle sizes are shown above; also made in 3-nozzle and 8-nozzle. Capacities given are with "Friend" Calyx nozzles having 1/16" orifice in disc.

**"Friend" Extra Area Filter Nozzle:** A most satisfactory nozzle for row-crop spraying, because of its cylindrical filter strainer—which has an area of 1.6 sq. in., far greater than that of strainers ordinarily found in row-crop nozzles. Delivers a fine soft spray, code Filte (SB660A).

